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SECOND PRIZE ESSAY.

Subject:—

"IN THE EXISTING STATE OF DEVELOPMENT OF WAR-SHIPS, AND OF TORPEDO AND SUBMARINE VESSELS, IN WHAT MANNER CAN THE STRATEGICAL OBJECTS, FORMERLY PURSUED BY MEANS OF BLOCKADING AN ENEMY IN HIS OWN PORTS, BE BEST ATTAINED?"

By Lieutenant HUBERT STANSBURY, R.N.

"*Ut Quocunque Paratus.*"

I PROPOSE, for the sake of clearness, to divide this essay into three parts, which will include the various matters connected with the subject. Thus, Part I. will contain a review and discussion of the conditions which caused the adoption of blockades in the past, and so of the strategical objects then pursued. In Part II. I shall attempt to show what strategical disposition of force at the present time would best comply with the lessons taught by history. While Part III. will deal with the modifications in strategy, which may be found necessary, owing to the changes and developments of the weapons used in naval warfare.

PART I.

THE STRATEGICAL OBJECTS FORMERLY PURSUED.

The first account in history of a British fleet establishing a blockade of an enemy's port, with the purpose of preventing his ships putting to sea without being brought to action, is in the summer of 1597, when Lord Essex took a fleet to Ferrol, wherein lay most of the sea power that had been left to Spain since the destruction of the great Armada. This did not last long, as, finding the enemy would

not come out, Essex took his fleet off to plunder the West Indies, thereby leaving Spain a practically free hand for mischief on this side of the Atlantic.

Monk's blockade of the Texel, after defeating the Dutch at sea in 1653, is another example of a blockade being established subsequently to obtaining the command of the sea by a victory; but the condition of the ships in those days did not permit them to remain long away from their source of supplies, in addition to which they had frequently to seek the protection of their harbours from bad weather. The attempt of the Dutch to blockade the Thames in 1666 was an illustration of the fact that such a thing is useless previous to a victory, unless the ships inside are either unwilling or unable to fight; since, as might have been expected, the blockaders were quickly dispersed by the blockaded.

Thus it is that the first time we hear of a blockade, before the command of the sea had been decided by a victory, was in the war with France which began in 1756, the reason for its adoption then being that the French practically accepted the position of the defeated fleet without risking the defeat, because they were possessed by the idea of reserving their ships safely to convoy the Army, which was to invade the British Isles, an idea that they clung to, to their cost, for another fifty years, and which was primarily responsible for the loss of their oversea empire.

Soon after the outbreak of this war, Sir Edward Hawke took up his station off Brest, wherein lay the fleet under the Marshal de Conflans, while Boscawen blockaded De la Clue in Toulon. In addition to these, there were another nine sail of the line in the West Indies, under Admiral Bompart, and the French seem to have rightly grasped the true principles of strategy, since they attempted to combine their three squadrons.

De la Clue, taking advantage of Boscawen being obliged to return to Gibraltar to refit, sailed from Toulon, and tried to slip through the straits unperceived; unfortunately for him he was seen by a detached British ship, but still he would no doubt have got away, as Boscawen's squadron was partially dismantled, but for his mistake in trying to change his rendezvous at night, through which his ships were scattered, and he, with those that had kept in company, were led straight into the hands of the chasing British, under the impression that they were his missing vessels. But Bompart joined Conflans, thereby completing part of the strategical idea, whereupon the latter put to sea, but only to suffer a severe defeat in Quiberon Bay at the hands of Hawke, whom he supposed safely in Torbay, where he had been driven by the gale that brought Bompart across the Atlantic.

Thus, our success in this war was certainly not due to the system of blockades, since it failed both at Toulon and Brest; but was primarily due to De la Clue's mistake, and, secondly, to the tactical superiority of Hawke over Conflans.

But even at the period of this war, blockading could not be made really efficient, as we have seen, on account of the insuperable difficulty in keeping the ships on their stations; not the least obstacle to which was the terrible amount of sickness among the crews of the small and ill-ventilated ships of those times, brought on largely by the poor quality of the food. Therefore, we see that most

of the operations up to this time consisted either in the opposing fleets seeking one another at sea and engaging in a general action, as in the Dutch wars, modified by attempts of the stronger fleet to fall on the weaker, or else in raids on shipping in their harbours, such as Drake's at Cadiz, and Blake's at Tunis, or that of the Dutch on Chatham in 1667.

Speaking generally, the policy of our great admirals was always to attack the enemy's ships wherever and whenever opportunity offered; on the high seas if they could, but if they could not, they were not often deterred by forts and batteries from attacking them in their own harbours.

Sir Francis Drake was the first Englishman to lead the way in this kind of operation, and both at Cadiz and at Cartagena, on the Spanish Main, showed that the harbour defences of those days were no protection for the ships. Following him, the great soldier-admiral, Blake, demonstrated effectively at Tunis and Santa Cruz that the fortifications of his day were little obstacle to the actions of a fleet; in the same way that Nelson did at Cadiz and Copenhagen for his time, and Sir Beauchamp Seymour, with more modern weapons at Alexandria, though in the latter case there were no ships to deal with.

But as forts became more powerful, owing to the greater range of the artillery and the increased striking energy of the projectiles, and as ships were constructed which were capable of keeping at sea for long periods, and in practically any weather, the system of blockading grew more in favour; thus we see that in the wars of the French Revolution it was everywhere adopted.

Though even then, it was not respect for the forts alone which prevented the shipping being attacked in their own harbours, but rather the great superiority of the blockaded over the blockading forces. For both Nelson at Toulon, and Cornwallis off Brest, had squadrons under them which were so far inferior in numbers and gun power to the opposing squadrons that to attack them while protected by the forts and batteries, and under conditions where their superior seamanship would have least chance of display, would have been madness. Duncan had a practically equal force against him, considering, too, that they were the Dutch and not the degenerate French seamen, and so had no alternative but to wait for them to come out and fight. On the other hand, St. Vincent, off Cadiz, allowed Nelson, who was then his Rear-Admiral, to carry out an attack on the ships in the port, though with little success.

This shows that the condition under which blockades were called into being were chiefly local ones—namely, that the blockaded fleet, though equal to, or stronger than, or at least not much inferior to, the blockading one, should yet refuse to leave the protection of its harbour to risk an action. Nelson showed pretty plainly that those were his ideas, and that an inferior fleet need not expect security from harbour defences, by his action in Copenhagen in attacking the ships, although supported by the Trekroner batteries, and protected by an intricate approach and a chain.

Taking cases, then, where the enemy was too strong to be attacked inside his harbour, and yet would not come out, we must next inquire if these local blockades were the best or only means of achieving the desired object.

Let us take the situation at the beginning of 1805, which may certainly be considered a very good example of the strategy of blockades. Cornwallis, with eleven line-of-battle ships, was blockading Ganteaume, with twenty-one, in Brest. Graves, with a small squadron of five, was watching Missiessy, also with five, in Rochefort. Cochrane, and later on Calder, was making the most of seven sail of the line to guard against the escape of the fifteen French and Spanish ships in Ferrol. Sir John Orde, with another five, was watching twelve in Cadiz; while Nelson, with eleven, was playing his "cat and mouse" game with Villeneuve's eleven in Toulon, besides trying to keep an eye on the Spanish Admiral Salzeco, with six sail, in Cartagena.

Perhaps the state of affairs will be better realised if I put it in a tabular form.

Enemy (blockaded).			British (blockading).	
Port.	Sail of the line.	Admiral.	Sail of the line.	Admiral.
Brest	21	Ganteaume.	11	Cornwallis.
Rochefort	5	Missiessy.	5	Graves.
Ferrol...	15	Gourdon.	7	Cochrane.
Cadiz	12	Gravina.	5	Orde.
Cartagena	6	Salzeco.	11	Nelson.
Toulon	11	Villeneuve.		
Totals	70		39	

Thirty-nine blockading seventy in six harbours, is an operation that would have been manifestly impossible but for the demoralisation of the French seamen, produced by the great revolution.

Looking first to the results of this system; Missiessy escaped from Rochefort and Villeneuve from Toulon, both during gales, which had driven off the watching squadrons; and there is little doubt that either Ganteaume or Gourdon could have done the same had they wished, and had their ships been ready to take advantage of their opportunities.

Obviously then, the scheme of blockades was not, in this case, found to be a complete success; and, had we had a more enterprising enemy to deal with, there is little doubt that it would have proved a ghastly failure.

Supposing Missiessy and Villeneuve, instead of rushing off to the West Indies as they both did, had seized their opportunity to try and unite with the Brest or Ferrol fleets. Having accomplished that, they should have been able to defy anyone of the blockading squadrons, and so have concentrated their whole force, with which they would have had the best chance possible of commanding the English Channel for the six, or even the forty-eight, hours, which Napoleon asked for at different times. As it was, neither of them did anything towards permanently assisting their country to victory; indeed, it was impossible for them to achieve anything likely to prove ultimately useful by such raids on defenceless property. It would really have been worth our while to pay Missiessy the 381,000 francs, which he obtained from our

West Indian possessions, in order to get him and his ships out of European waters at such a critical time.

But the above scheme came near to being realised when Villeneuve, on his return from his abortive raid, and after his indecisive action with Sir Robert Calder, united with the Ferrol squadron. If he had only had the nerve then to sail north, raise the blockade of Brest, and join Ganteaume, it would have been, in fact, complete, since Nelson was at that time at Gibraltar, and so could not have interfered.

Thus, it must be owned, that this system of scattered blockades was found to be ineffective and hazardous; and it remains to be seen if any other method could have been employed with more chance of success.

The question naturally arises as to what it was that we wished to prevent the enemy doing, in the event of his managing to get to sea. Nelson apparently thought that Napoleon was still intent upon sending a force to Egypt without first obtaining command of the sea communications, regardless of his former experience; but the Toulon fleet was hardly likely to court such disaster, a second time, as befell them in Aboukir Bay.

It would have been equally futile for Villeneuve to attempt any operations against Malta, so long as a British fleet was near enough to prevent his return to Toulon; and, therefore, the only thing Nelson had to guard against was, what actually happened, viz., that the French admiral would leave the Mediterranean; and that he could have best prevented by remaining between him and the Straits, if not at Gibraltar itself.

The only courses open to the squadrons on the Atlantic coast, could any or all of them get to sea, were either to raid our West Indian Islands, as two of them did; or to make a descent on the shores of England or Ireland; or else to intercept our merchant shipping.

But such descents on our shores had been shown to be absolutely devoid of all chance of success so long as we had a fleet prepared to follow; a "fleet in being," as it was called by Lord Torrington. The expedition in 1796, under Hoche and Morard de Galles, with seventeen line-of-battle ships, and 17,500 troops, followed by those of 1798 under Savary and Bompart, were examples of the uselessness of such attempts. The first reached Bantry Bay after being dispersed by a gale, only to return without attempting anything because they heard that a British fleet was approaching. The second landed its troops at Killala, but they were so few that they were soon obliged to surrender; while the third fell in with a squadron of little more than half its size, under Sir John Warren, and only two of the ships got back to France. That the French were taught by these examples the necessity for making certain that there was no "fleet in being" to interfere with the passage and landing of their troops, was shown by Napoleon demanding that the British squadrons should be forced, or deluded, out of the Channel, if only for six hours, before he would attempt the crossing.

With regard to the protection of our merchant shipping, the only influence which that could have had upon the strategy of our line-of-battle was in the withdrawal of the necessary vessels for

furnishing convoys and patrols, and thereby detaching the frigates from their duty as scouts.

We may, therefore, conclude that the strategical object of our fleet consisted chiefly in being able to remain at sea in sufficient force to be able to attack any squadron which the enemy could bring against it, which in itself would be quite enough to prevent any descents in force on our coast. Secondly, to be prepared to chase should they despatch a squadron to the West Indies or other oversea possession, in the same way that Cochrane chased Missiessy and Nelson chased Villeneuve. Thirdly, to provide convoys and other protection to our merchantmen.

The method employed in the Napoleonic wars, of blockading each fleet in its own port with a small squadron, was, as I have tried to show, open to the objection that, if any one squadron managed to get to sea unobserved, it gave the advantage in power of concentration to the enemy; an advantage to obtain which is the principal study of the science of strategy.

It would assuredly have been a safer plan to concentrate the majority of the line-of-battle off Brest—namely, Cornwallis', Graves', and Cochrane's squadrons—with merely a few look-outs off each of the other ports, and one or two fast craft attached to them to carry the news to the Admiral if any of the enemy put to sea. Then, with Nelson, reinforced by Orde's ships, at or near Gibraltar, and his look-out frigates off Toulon and Cartagena, the worst that could have happened was for the Rochefort, Ferrol, and Cadiz squadrons to unite, making a much smaller and less dangerous force than actually did unite when Villeneuve reached Ferrol.

Having combined, they could only have gone North to meet the much stronger British Fleet, advancing from Brest; or else south to tackle Nelson off Gibraltar; the chance of either Ganteaume in the first case, or Villeneuve in the second being able to take part in the action, especially in those days of uncertain passages, were very remote; in fact, the most for which they could have hoped was that they would be able to encounter the victorious fleet in a sufficiently shattered condition to make success possible, though it was unlikely under the circumstances. For, though Nelson, at Gibraltar, would have held the most dangerous position, he would, no doubt, have been equal to either the combined Cadiz, Ferrol, and Rochefort, or the Toulon and Cartagena squadrons. Then the only danger lay in the chance that, after beating one of them, he would have had to encounter the other before either the Brest Fleet could come up, or he could retire under the guns of Gibraltar.

This plan of operations seems so much sounder than the one adopted, that one is inclined to ask why it was not employed, since it could hardly have been overlooked by men like Nelson and St. Vincent. The answer probably is, the lack of frigate, of which Nelson so bitterly complained in his despatches; and of which Sir Robert Calder only had two attached to his fleet, while there were only four with the fleet which fought Trafalgar. Of course, without a fair supply of frigates, such a scheme of watching the enemy's ports while concentrating the line-of-battle was impossible; and so the admirals probably did the best they could with the *matériel* at hand, though the wear and strain on them and the whole fleet must have been enormously increased thereby.

At the same time, there does not seem to be any good reason for the paucity of frigates, since in that year there were, roughly, 115 on the list of the Navy; but these, with the exception of about twenty-five kept to watch the invasion flotilla, appear to have been mostly employed in protecting the merchant shipping, either as convoys or patrols, instead of in their proper duty as the "eyes of the fleet." That Nelson thought that to be his proper duty is shown in his despatches. Thus, on 9th August, 1798, he writes to Lord Spencer:—"Was I to die this moment 'want of frigates' would be found stamped on my heart. No words of mine can express what I have and am suffering for want of them." And again, on 6th September, 1804, he says, in a letter to Sir A. J. Ball:—"I wish I had any sloops of war, . . . If I had them I do assure you not one of them should go prize-hunting—that I have never done."

Admiral Rodney proved on two occasions in the West Indies that, by making a right use of his frigates, an enemy could be efficiently watched, and information with regard to his movements passed to the battle fleet, lying at some distance. First, in 1780, when he left the Comte de Guichen in Fort Royal Bay, Martinique, watched by his frigates while he retired to Gros Islet Bay with the battle-fleet, leaving it on receipt of the intelligence of the enemy having sailed, and, owing to the information sent him, bringing him to action two days later. The second occasion was just before his great defeat of de Grasse, who was watched by a small squadron, also in Fort Royal Bay, while a chain of frigates was maintained to pass information to Rodney, lying at Santa Lucia. With fourteen frigates and two sloops such strategy was rendered possible.

After Spain joined France and Holland against us in August, 1796, a somewhat similar system of blockades to the one already described was instituted. Thus, Sir John Jervis was in the Mediterranean with the fifteen ships of the line, having the twelve French at Toulon, and the seven Spanish at Cartagena against him in that sea, while Mann, with only six of the line, watched the nineteen Spanish sail under Langara in Cadiz.

It can hardly be said that the French Fleet in Brest were blockaded, since Lord Bridport, then in command of the Channel Squadron, kept his battle-ships chiefly at Spithead; so far indeed from the enemy's port that the latter could easily have proceeded to any destination they wished without fear of being overtaken.

In fact, all the blockading of that time was of a much looser description than in 1805, except, perhaps, that of Duncan, off the Texel, where he was waiting with sixteen ships to give battle to the Dutch fifteen, as he eventually did a year later off Camperdown.

The operations, resulting from this disposition of force, began in the manner one would have expected—namely, by Langara entering the Mediterranean with his nineteen sail, which the six ships under Mann were naturally powerless to prevent. There he effected a junction with the seven sail in Cartagena and the twelve French in Toulon, making a grand combination of thirty-eight ships of the line, before which Sir John Jervis, with only fifteen, was obliged to quit the Mediterranean, being fortunate in doing so without being brought to action, which, if the enemy had been at all energetic, he might not have accomplished.

The only chance for Jervis was to have met the Spaniards before they could join the French, and the most promising plan for achieving this was to remain in or near the Straits of Gibraltar, in the manner I suggested for Nelson's fleet under like circumstances, in 1805.

Even if Langara had managed to unite with the Cartagena squadron, it would only have formed the same force which afterwards fought at St. Vincent, with the result we know, only that, in this event, the English would not have been obliged to leave the Mediterranean, and the enemy would never have arrived at the great power for harm that their combined strength of thirty-eight sail gave them, and which they so foolishly threw away again by separating before they had accomplished anything.

The chief fault lay with Mann, who, instead of standing North to join the Channel fleet, should have retired before the enemy to join Jervis, keeping him informed to the best of his ability of Langara's movements. This would have given Jervis an overwhelming force against the Spaniards, and might even have permitted him to hold his own against the combined fleet, since the proportion of 38 to 21 is almost the same as that of 26 to 15, which were the odds against him at St. Vincent.

Had the Brest fleet sailed to the South to join forces with the Cadiz squadron, before proceeding to the Mediterranean, as they afterwards did in 1799, neither Mann nor Jervis should have escaped without being obliged to fight a theoretically overwhelming force. I say "theoretically," since it is impossible to decide how many ships, manned by the ill-trained and badly-officered French and Spanish seamen, would have constituted an overwhelming force to 21, manned by their highly efficient English crews. Still, we may presume that a fleet of forty sail would have been a hard nut for Jervis to crack, while, had they done as Langara did, and united with the Cartagena and Toulon squadrons, they would have formed an Armada of fifty-nine, which should have been capable of doing great damage to the scattered British ships.

Thus we see that the result of our policy was to give the strategical situation entirely into the hands of the enemy; and had they only had the ability to take advantage of it, or had they been in any way equal to the British in tactics and fighting power, the latter must have suffered a most complete disaster. Can anyone doubt that, if the French and Spanish ships had been manned by foes of the mettle of our former antagonists, the Dutch, who even now made such a good fight against Duncan's superior force at Camperdown, the result of the war would have been very different? Luckily for us, the French Revolution had completely demoralised the Navy of France, while the Spanish Navy had even at that time become effete; and it is those influences which we have to thank for our ultimate victory, rather than the strategy we employed, as we are bound to recognise if we examine the facts.

Unfortunately, we can never rely on such advantageous conditions occurring in a future war, and, though it is to be hoped that the British seaman will always be a better fighting man than one of any other nation, the most we can trust to with safety is that his superiority will be sufficient to give him the victory over an equal force in ships and guns.

Besides greater skill in handling ships and working guns, the Revolution procured us far higher ability in leadership; for the

type of admirals which fought against us in 1778 and 1783, and of which d'Estaing, de Guichen, de Grasse, and, perhaps, greatest of all, de Suffren, were examples, had been replaced in the great social upheaval by that of such popular favourites at Villaret Joyeuse. Such men had not the experience of the old leaders, neither were they of the sort to attempt to acquire from the histories of past wars the knowledge which they lacked; and so they were quite unable to take advantage of the strategical situation, and were by no means equal to the English leaders in tactics, while the latter acted in the way that the Dutch first taught us was the only possible one, if the object were permanent and complete victory—namely, to abandon all side issues, and to devote all their power towards so damaging the naval strength of the foe as to prevent him being able to keep the sea with his fleets.

It was owing to this truth, which the English and Dutch both discovered in the first of their three naval wars, that the latter, in both the second and third contests, ordered their merchant ships to remain in harbour while they concentrated all their efforts to annihilate the British Fleet—efforts to which the British were not slow in responding, as is illustrated by the number of sanguinary fights which took place between them.

The older school of French seamen showed that they had also profited by the experience of those wars by their actions on the outbreak of hostilities in 1778, when Count d'Estaing proceeded to North American waters and wasted little time in trying conclusions with Lord Howe, while d'Orvilliers, in the Channel, was not much longer in meeting Keppel in a trial of strength.

Still, it must be confessed that the French admirals were never so eager to bring an action to a decisive conclusion as the Dutch had been, consequently the struggle for "the command of the sea" always took considerably longer to settle with them than with the latter. And, in these days, time will be a far more important factor in the strategical plan than it was in the past, not alone through the introduction of steam and other inventions making combined movements more certain, but chiefly because the presence of a large number of neutrals will tend so much to loss of trade, even for the victor, for the benefit of those neutrals.

Modern inventions will make rapid mobilising, which gives choice of strategical positions, even more important than of old, although the Duke of York showed the tremendous advantage it gave when, on the outbreak of the Dutch war in 1665, he got to sea with the English Fleet under his command before the enemy were ready, and, by stationing himself off the Texel, prevented any operations whatever on their part, since they were unable to unite their forces, which were distributed between the Texel, the Vlei, the Maas, and the Scheldt, until the necessity for revictualling obliged the Duke to withdraw his fleet to Harwich. Had his ships been those of a century later, so that he could have kept his position, the Dutch would have remained in that hopeless position, or would have been obliged to risk their squadrons being defeated in detail as they put to sea.

The elder Tromp was placed in a similar situation in 1663, when, with 80 sail, he was lying in the Zealand ports, while De Witt, with twenty-seven, was in the Texel, and between them was the British fleet with 106 sail under Monk; but then Tromp was a tactician practically without an equal in his day, and so he managed to unite

his forces, though his success was dearly bought, as it always is when gained in retrieving a faulty strategical position, if the enemy knows how to take advantage of it.

From these instances, we see how important it is to be first at sea, for geographically, the advantage lay with the Dutch, since their naval ports in the Texel and Maas were much closer together, and, therefore, more convenient for concentrating, than the English ones in the Thames and on the south coast. And so, had they been able to mobilise with equal rapidity, they had a much better chance of being off the Thames with their combined fleet before the ships from the English western ports could arrive, than we had of interfering with their concentration.

On the other hand, in the wars with France, the advantage in geographical position was on our side, since the situation of their two chief naval arsenals of Brest and Toulon gave them little chance of being able to concentrate; whereas, all our principal ports were on the comparatively short seaboard, between the Thames and Plymouth, and within easy distance from Brest. Thus it was a comparatively easy matter for us to post a large force off the latter port; so that the only chance the French in it had of avoiding being blockaded was to escape to the south before our fleet could assemble, and, after picking up the ships in Rochefort and Lorient, to try to unite with their Toulon squadron. To prevent this junction, we held the strong position of Gibraltar; and, if the Mediterranean Fleet had been stationed there, the Toulon squadron would have had little chance of combining with those on the Atlantic side of the Straits. For Boscawen prevented it, and would have been more ready to prevent it, had he not had all his ships refitting after the blockade of Toulon, and Jervis and Nelson would both have been able to prevent it had they remained there instead of further to the eastward.

I think I have said enough to show that the system of scattered blockades, which was employed in former wars, is risky and dangerous in the extreme, unless one can make absolutely certain of the watching squadrons not being eluded. Also that it is a far safer policy and sounder strategy, as fulfilling the great law of concentration, to unite our battle strength within striking distance of the enemy's principal port, thereby preventing the junction of his squadrons.

PART II.

The Strategical Disposition of Force for Modern Warfare.

Now, as ever, there is really but one law regulating the science of strategy, whether on land or sea, and that is the "Law of Concentration," which tells us that to attack the enemy in detail with an overwhelming force is the surest means of victory. This one great law, if examined, may be seen to include a vast number of others, of which that of guarding your communications and sources of supply, is one of the most important. For, unless that is done, there can be no hope of concentrating your forces until those communications are restored.

These two laws were well understood by both the English and Dutch before the end of the great wars between them. For in both

the second and third wars each side used every effort to concentrate all their available force, which led to those tremendous fights which fill the history of those times, while Monk and the Duke of York, by stationing their fleets off the Texel, were really interrupting the Dutch lines of communications.

As a means of illustrating these principles in modern warfare, I will suppose this country to be commencing a war with France and Russia combined. I select France as one of the combatants since the proximity of that country and the locality of her naval ports with reference to ours, make the most strategical problem, wherein her naval strength is included, the most difficult of solution. I add Russia in order to make the forces more equal, and because of the Dual Alliance; though, as far as the strategical study is concerned, Germany and Italy, or Austria, would do as well.

In discussing questions of strategy, the battle-ships only need be taken into account, as they represent the real naval power; thus, the French force would, on the outbreak of war, be distributed, in all probability, between Cherbourg, Brest, and Toulon, and, perhaps, Bizerta; while the Russians would be in the Baltic and Black Sea, as far as European waters are concerned, to which we will confine ourselves for the present.

Judging by the present [1] distribution of their ships, we might expect to find them in those various places in roughly the following numbers:—

Baltic	11	Toulon	17
Cherbourg and Brest	10	Black Sea	5

It is impossible to estimate how many would be in Brest, and how many in Cherbourg, and it is also possible that four of the Toulon ships might be at Bizerta, though the proposal to station them there does not appear to have been carried out yet.

If we followed the strategy of the Napoleonic wars, we should divide our available ships into blockading squadrons, and station one of them off each of those harbours, in the hope of preventing any of the enemy's ships putting to sea without being brought to action. But, as we have seen in the history of those wars, such a plan gives the power of concentration into the hands of the enemy, unless the blockading squadrons can make absolutely certain of achieving their object. And how can they make so certain? A foggy night, a feint drawing off the watching ships, with torpedo attacks, actual or threatening, keeping the blockade from being pushed home too closely, and the enemy would be away with, probably, a six, or even twelve hours' start, enabling them to effect a concentration, and overcome our squadrons in detail.

Even if we could make sure of preventing their escape, the act of separating our fleet in the above manner would take from us the advantage of concentration, even if it did not give it to the enemy; and so, supposing their ships did come out and fight, the results would be a series of small actions between approximately equal forces, from which nothing decisive could be expected. The damages to the ships would almost certainly cause the blockades to be raised, both the combatants having to return to their ports to refit, when, as the blockading force would be so much further from their base, the

[1] January, 1903.

chances are that the enemy would be first to sea again, and able to effect the junction which we should be powerless to prevent; just as the Dutch did when Van Tromp forced Monk to return to his harbours and raise the blockade of the Dutch ports, although he had gained the victory.

Turning then to the alternative, the problem is to so dispose our fleet as to prevent the hostile squadrons uniting without first being brought to action by a superior force.

Theoretically, a squadron can, without dispersing, only prevent the junction of the ships in three ports by a blockade of those in the central one, moving to meet the force from either of the other ports should it put to sea with the intention of trying to concentrate; although such a movement would give the central squadron a chance of escaping to join the third. But, practically, geographical considerations must be taken into account. Thus, if we take for example, the Baltic, Cherbourg, and Brest, a squadron blockading Cherbourg would give the Brest ships an opportunity of joining the Baltic contingent to the North of Scotland, a risk that would be only justifiable in the event of there being a strong force inside Cherbourg, as then the blockaders could still make practically certain of fighting the two detachments in detail.

As a matter of fact, we ought to be able to muster twenty-three battle-ships in the Channel to the French ten; and, with such a superiority, it would be obviously easy to prevent the ships in either Cherbourg or Brest putting to sea without great risk of annihilation, and yet be ready to concentrate to meet the fleet from the Baltic.

With the larger part of our fleet in the neighbourhood of a line drawn between the Start and Ushant, and a detachment, roughly proportional to the strength in Cherbourg, between that port and the Straits of Dover, it should be quite impossible for either of their squadrons to unite with the Baltic Fleet. The worst that could happen under those circumstances would be for the Russians to risk defeat in drawing our ships out of the Channel to meet them, in order that the Brest and Cherbourg squadrons might escape to the southward and attempt to unite with the Mediterranean ships. Let us see what they would be likely to achieve in that event.

The twenty battle-ships of the combined British Mediterranean Fleet and Channel Squadron would have the task of trying to prevent the junction of the Toulon and Black Sea Fleets—also of the Bizerta ships with either, should there be any in that port—but, above all, of keeping any of them from leaving the Mediterranean to unite with the Northern Squadrons. The latter object could undoubtedly be best pursued by remaining at, or near, Gibraltar, and, if it were only the Toulon force which had to be reckoned with, such would undoubtedly be the soundest strategy, since it would be rendered quite as ineffectual thereby as it would be by a close blockade of Toulon itself. For, besides escaping from the Mediterranean, the only objectives for that Toulon Fleet could be Malta and Egypt, to make an attempt on either of which, while twenty English battle-ships remained unbeaten in that sea and ready to throw themselves across their line of communications, would be to court disaster even more surely than did Napoleon when he made his fatal descent on those places.

Whether it would be advisable to advance into the Mediterranean merely to prevent the five Russian ships from the Black Sea getting

to Toulon is rather doubtful. In the first place, only two of the five are modern ships, and, secondly, by trying to intercept them the British admiral would be obliged either to leave the door of the Mediterranean open, or else to detach ships that would destroy his superiority over the French. If a squadron were detached, the remainder of the fleet would also have to advance far enough to the eastward to prevent the Russians being reinforced from Toulon, though not so far as to leave the Straits of Gibraltar unguarded.

Probably the best plan would be to keep the Fleet intact as long as possible, and wait for an opportunity of detaching a squadron to fall upon the Russian force with a quick and sudden stroke, trusting to reunite in time to intercept the French should they attempt to pass through the Straits. If they tried to do so before the detached ships could rejoin, the British admiral would have to choose between fighting them with a slightly inferior force, and keeping touch with them until assistance reached him; and, also, if they essayed to go to the relief of the Russians, he would either have to fight or retreat before them until his detached squadron could come up with him.

By keeping the Fleet near the Straits, the Toulon Squadron might, perhaps, sail eastward to join the Russian force; but that would be much more favourable to us than letting it leave the Mediterranean, or giving the Brest and Cherbourg Squadrons an opportunity of entering that sea, for, in the former case, we should have it in our power to force their combined Fleet into action on their return at such time and place as would suit us best. And, by remaining near Gibraltar, the British admiral would be in the best position to deal with the situation should the Brest and Cherbourg ships escape to the south as above described, for then he could advance and destroy them before they could reach the Mediterranean, and, having more than double their strength, it is unlikely that he would suffer much in the operation.

Thus, with one British Fleet in the Channel, and another in the Straits of Gibraltar, a deadlock would be created just as effectually as, and with infinitely less risk than, by a successful blockade of each of the hostile ports; and the only ways in which it could be ended would be either by the Toulon Squadron, reinforced, if possible, by the ships from the Black Sea, agreeing to a pitched battle with the British Mediterranean Fleet, for by such weakening of the British forces by torpedo and other raid, or by accidents, as would upset the relative strengths of the forces engaged, or else by action on the part of the British against the enemy's ships behind their harbour defences.

The possibility or probability of the last two will be discussed later; but with regard to the first, if the action were indecisive, as it well might be, considering that the number of battle-ships on either side would be fairly equal, the situation would be unaltered. If the enemy obtained a victory, he might be able to unite the least injured part of his force with the northern squadrons, perhaps effecting a combination of the whole, which would make our position extremely perilous, though the chances of his doing so would be considerably lessened by the British fleet in the Channel advancing to meet the hostile Mediterranean ships, which would be the correct strategy, for, although the Brest, Cherbourg, and Baltic Squadrons would thus be able to combine, the greater and more threatening concentration would be prevented. If the British won, it would practi-

cally decide the war, for it would make our command of the sea indisputable.

There is no doubt that the French have greatly strengthened their strategical position by concentrating their battle-ships at Toulon, in accordance with the advice of Admiral Aube. Fortunately their Fleet is neither as powerful nor as homogeneous as our combined Channel and Mediterranean ones, so that the chances of victory are on our side.

The only objection which I can see to this plan, regarding it solely from the point of view of strategy, and not of tactics, is that it would leave the enemy, and particularly the two Russian squadrons, free, to some extent, to commit raids on our territory and commerce. But their only objectives could be either fortified or unfortified places, and the merchant shipping. To attack the former without first dealing with the fleet would be only to weaken themselves to our advantage. The second are protected by custom and convention, since time could only permit of plunder or destruction, and, even were they resorted to, such operations could no more affect the result of the war than did Missiessy's raid on the West Indies.

As to the merchant shipping, we might, perhaps, follow the example of the Dutch with advantage, and order all whose speed did not give them practical immunity from fear of capture to remain in port until after the command of the sea was secured by a victory, except at their own risk, although the hostile cruisers, who would be the principal depredators, would be closely watched by our own similar ships, acting as scouts for the fleet, in the manner which will be described in the next part of this essay.

The situation of England is, strategically, very strong as a base from which to conduct naval operations against European Powers, lying as it does practically midway between those of the North, whose bases are nearly all in the Baltic, and those of the South, with the strongest bases in the Mediterranean. So that, although it would be almost impossible for us to prevent the union of the fleets in the Baltic, or of those in the Mediterranean, were they allied against us in greatly superior numbers, we could concentrate our Fleet with the practical certainty of bringing either the northern or southern combinations to action with a stronger force.

Supposing, for the sake of illustration, that the Dual and Triple Alliances were allied against us; we could probably do nothing to oppose the junction of the Russian and German squadrons in the Baltic, and little to hinder the combination of the Toulon, Italian, and Austrian fleets. Thus we should have 31 ships from the Baltic, 32 from the Mediterranean, and about 10 in between to deal with, having only 45 to bring against them.

The only possible strategy in these circumstances would be to concentrate all our battle-ships in the Channel, and prepare to bring either of the combined fleets to action before they could unite, since our 45 should be able to achieve a decisive victory over either of them separately, though it would be an almost impossible task to oppose them if once the 63 ships met.

If Germany was not one of the combatants, it is possible that we could afford to stay in the Mediterranean by reinforcing the fleet there, and only leaving fifteen ships in the Channel, to hold in check the eleven Russians in the Baltic, and the ten French in Cherbourg and Brest. Then the object of the Commander-in-Chief in that sea,

with his thirty ships, would be to prevent the Italian and French ships uniting, and, considering that his ships would be all, or nearly all, in perfect preparation for war, while many of the enemy's would be delayed commissioning and filling up complements, it is likely that he would be able to throw himself between them before they could join forces.

Let us review the situation, which is a good example of the advantage to be gained by correct strategy.

We may take the distribution of the hostile forces to be as follows:—Toulon, 17; Spezia, 12; Trieste, 4; Black Sea, 5.

It would be very difficult to keep the Toulon and Spezia squadron from uniting, and also to make sure that the former did not escape through the Straits; in fact, the British Fleet would have to remain within 40 miles of Toulon on a S.E.b.S. bearing from that port in order to obtain a chance of preventing both contingencies. Therefore, the Commander-in-Chief would have to decide as to which was the most to be feared. If these two squadrons did unite, the enemy would have a force of 29 against our 30, which would still give us a practical certainty of victory; although, in the event of such an action, the enemy would have an advantage in the proximity of their bases. If the Toulon squadron got away with a few hours' start for the Straits, it ought to be met by the fifteen ships from the Channel, while the Mediterranean Fleet was close on its heels, even if it had not been previously overtaken. Of course, this would give the Baltic and French Northern Squadrons an opportunity of uniting, and also the Italian, Austrian and Russian Black Sea Fleets making combinations of 21 in each case, against either of which we could bring our 45 ships, or such of them as remained fit for action after the battle with the 17 from Toulon.

From which we may, I think, conclude that it would be preferable to risk the Toulon fleet making a dash for the Atlantic, rather than give it an opportunity of joining the Spezia one.

To make sure of this, the British Fleet would have to remain somewhere near the Gulf of Genoa; from which position the Admiral could afford to detach ten of his ships, if he had an opportunity of striking a blow at the combined Russians and Austrians, as he would still have twenty left to meet either the French seventeen, or the Italian twelve, which detachment he could never have spared had he devoted his attention to preventing the escape of the Toulon squadron, and so risked being attacked by the twenty-nine French and Italian ships.

Thus we see that with thirty ships he would be holding in check 38; or taking the whole field of operations, our 45 ships would be compelling 59 of the enemy to remain impotent, since not one of their squadrons could leave its port without risk of being annihilated by a greatly superior force.

And that is the right test of a sound strategy, namely, that it will give the weaker power an advantage over the stronger. But it should not be forgotten that the choice of strategy rests absolutely with the force, which is able to get into position first, as was shown by the Duke of York in 1665, which choice ought certainly to be ours, considering the state of preparation in which our battle-fleets are kept, and the proximity of our chief naval ports to each other.

If France were not one of the combatants, the strategical problem would be greatly simplified, since the forces of the enemy would be much better divided, and concentration for us proportionally easier.

Thus, if we were opposed to the Triple Alliance, we should be able to keep a strong force ready to intercept the German ships should they attempt to leave the Baltic; while in the Mediterranean, we could prevent the Italian Fleet in Spezia either leaving that sea or uniting with the ships in the Adriatic.

Were Russian joined to the Triple Alliance, the point of greatest danger would be in the Baltic, so that we should require 30 ships in the North Sea to hold in check the combined Russian and German Fleet, since it would be practically impossible to prevent that combination, not only because the situation of their ports would greatly favour it, but also because it would be much too risky to try and get between them, even if rapid mobilising gave us the opportunity to do so, as long as the Germans could attack our line of communications through the Kiel Canal. This would only leave us 15 ships in the Mediterranean, and they would have the work of preventing the junction of the Italian, Austrian and Russian ships in Spezia, Trieste, and the Black Sea respectively; a task they could, probably, best accomplish by remaining in the neighbourhood of Malta.

At the present time, the only stations out of European waters where there are sufficient foreign war-ships to make a consideration of the possible strategy necessary, are on the coasts of America, and in the China Seas: our naval forces on all the other stations being merely employed on "police" duties.

By "police" duties, I mean the protection of commerce and territory against casual raids, as differing from an organised attack in force against our naval supremacy or possessions. Thus, on the Australian station, the duties of the Navy are entirely restricted to these; on the Cape, West Coast of Africa, and East Indies stations, the "police" duties include protecting the lines of communications to the farther east, though for the two former, only in the event of the Mediterranean and Suez Canal, being closed to our ships.

The cruisers on the stations round the American continent can, in addition to their "police" duties, only act as advance guards, or scouts, in case of war with any of the stronger naval Powers, especially with the United States.

There remain the China Seas, where the Russians have bases at Vladivostok and Port Arthur, the French one at Saigon, the Germans one at Kiau-Chau, and the United States one at Manila, beside those belonging to Japan in that country.

As long as we can count on the assistance of Japan in those seas, we have so great a preponderance over any other combination that we could afford to divide our Fleet to mask each of the enemy's ports. Thus Saigon and Kiau-Chau are at present only bases for cruisers, and would require to be covered by a cruiser blockade, while the battle-fleet could divide its attentions between Port Arthur and Vladivostok. But, if we did not have the help of Japan in a war with Russia, the key to the situation is undoubtedly in the vicinity of Quelpart Island, where, by stationing the fleet, the Russian forces would be divided, and also the line of communications to Hong Kong covered.

I think I have taken enough cases to show that the best station for the battle-fleet is rarely, or never, in close proximity to the enemy's port; but rather concentrated in some position where it can strike at one or two, or more, of the hostile squadrons with the certainty of being in greatly superior force.

PART III.

The Influence of the Development of War Ships, and of Torpedo and Submarine Vessels, on Strategy.

We have examined, so far, the strategy of the battle-ships, and it is now necessary to inquire if it would be possible to carry out such strategy, with the various types of vessel at present afloat.

There are three things to be decided in this respect. Firstly, whether the battle-fleet itself could remain in its strategical position for a sufficient length of time, or would be obliged to return to harbour for more coal and stores, or to refit? Secondly, whether a battle-fleet so stationed, could rely on accurate enough information being supplied to it by its auxiliaries to make certain of its being able to bring the enemy's squadrons to action as desired? Thirdly, whether the presence of submarines and torpedo craft would prevent the battle-fleet maintaining its position.

The Coal Supply.

Taking these questions in order. If the fleet required to keep its position longer than the supply of coal would justify, that is without that supply becoming dangerously diminished, the ships would either have to coal at sea, or to reduce the power of the fleet by being detached in turn for this purpose.

The experiments carried out by the "Trafalgar" and "Empress of India" with the collier "Muriel" and the Temperly-Miller transporter, at the beginning of 1902, show that the problem of how to coal at sea is in a fair way towards being solved, at any rate in fine weather. For, though 40 tons an hour is not a large quantity to tranship in these days of rapid coaling, it is better than having to detach ships into harbour for the purpose; besides, it is not so many years ago that 40 tons an hour was considered fairly quick even in harbour, so that we may expect, with practice, to see that amount doubled or trebled at sea.

This question is one of the most important of those with which the Navy has to deal, being quite as momentous as those of submarines or wireless telegraphy. For, as long as the man-of-war relies on coal for its means of locomotion, the strategy of the fleet will depend more on the collier than on anything else; and many a winning position may have to be abandoned in a future naval war through the failure to perfect these arrangements for coaling, in exactly the same way that the Duke of York had to retire from his advantageous station in 1665, through lack of his most important supplies.

The coal supply bears a similar relation to strategical problems as speed does to tactical ones, since the necessity of putting into a harbour for coal must handicap the fleet, or reduce its fighting capacity in a corresponding manner.

If the ships have to return to their ports to coal, the proportion in which the fleet will be weakened will depend on the distance from the port and the time each ship can keep at sea.

Thus, if N = total number of ships in the fleet,
T = time each ship can remain with the fleet,
t = time each requires to be detached to coal,
n = number of ships detached at a time;

then— $n = \frac{Nt}{T}$, which equation must be allowed for when calculating the strength of the fleet.

But in none of the cases discussed in Part II. need the number detached be prohibitive, as, even if coaling at sea were out of the question, it is nearly always possible to find some sufficiently sheltered anchorage within a hundred miles of the cruising ground, where a temporary base for the use of the fleet can be formed, in the same way that Nelson made use of Agincourt Roads, during his blockade in Toulon.

For example, the Mediterranean Fleet, if stationed to prevent the junction of the ships from Toulon and Spezia, would be about 800 miles from Gibraltar, and 500 from Malta. If they had to go all the way to the latter place for coal, each ship would be at least 78 hours away, allowing her fifteen knots on the passage, and only twelve for filling bunkers. Then taking 14 days as the average time it would be advisable to keep each ship with the fleet without depleting herself so much as to be at a disadvantage with the enemy, our equation for the 30 ships will be—

$$n = \frac{30 \times 3\frac{1}{4}}{14} = 7 \text{ (nearly).}$$

In other words, seven of the thirty would be constantly detached.

But, by arranging to coal somewhere on the North Coast of Corsica or its neighbourhood, the time for each ship's absence would be at the most 18 hours, and even then they would be ready to rejoin if an action were impending, when the equation would become—

$$n = \frac{30 \times \frac{3}{4}}{14} = 2 \text{ (approximately).}$$

In fact, as long as the base is within 100 miles, not more than $\frac{1}{12}$th of the force need be detached at a time.

On the coast of America, our permanent bases are so far from the strategical positions which our fleet would want to occupy, that temporary ones would usually have to be secured; while, in the China Seas, although Wei-hai-Wei is well situated for operations against the ships in Port Arthur, if we were without the help of Japan we should probably be obliged to form a base at Port Hamilton, or elsewhere in the neighbourhood of Quelpart.

It would be a matter of the utmost importance for the Admiral to determine to what extent he was justified in letting his ships become short of fuel, and his decision would have to be formed by the possible exigencies of each situation.

Thus, in the case we have been referring to in the Mediterranean, the biggest effort would probably be caused by the Toulon Squadron making a dash for the Straits, when the fleet might be called upon

to chase them until they were headed by the Channel ships, a distance of, perhaps, 1,300 miles. Supposing the greater part to be done at four-fifths power, it would mean consuming 650 tons, in addition to which another 150 tons would be required for the battle, and for getting into port after it. Thus, in this case, arrangements would have to be made for coaling each ship before she was reduced to 800 tons.

These calculations are made from the averages of the speeds, and the corresponding coal consumptions of several battle-ships of the classes which would be likely to form that fleet, and so due allowances would have to be made for those whose consumptions were excessive, or carrying capacities small.

Scouting.

We must now turn to the question of information being supplied to the battle-fleet, as on the efficiency of that entirely rests the success of the strategical principle advocated in Part II., namely, that by which the battle-ships are to be concentrated in a position to strike at the separate squadrons of the enemy before they can unite.

If that system is to be adopted, it is absolutely necessary that rapid and accurate information as to the movements of those squadrons should be furnished to the Admiral, otherwise the plan is bound to fail, and it would probably be wiser to return to the scheme of scattered blockades, risky though they must be.

The duty of obtaining and supplying information is essentially that of the cruisers, and, to enable them to do so effectually, they must be in sufficient force to take up a position from which they can observe the opponents' movements, and in sufficient numbers to rapidly transmit the news as well as to keep an efficient watch. The actual force and number required by a fleet must depend entirely on the particular duties for which they may be needed. But it should never be forgotten that, without a proper supply of scouting vessels, a fleet is blind, and so all strategical operations are bound to fail except by a lucky chance; such a chance as took Villeneuve to Ferrol and Vigo, after Nelson, for lack of scouts, had been strategically beaten.

The principal operations of scouts may be separated under five headings, namely, to watch a hostile fleet in harbour; to watch one at sea; to find one that is known to have put to sea; to prevent the passage of one through a strait or channel unobserved; and to form a screen for the movements of their own fleet; all of which include the transmission of the information acquired to the Admiral as rapidly as possible.

In the first of these operations, the scouts must be able to keep a sufficiently close watch on the entrance, or entrances, of the port, to prevent the escape of any vessel unobserved, to enable them to do which they must be powerful enough to keep their position until the battle-ships come out, and numerous enough to make sure of the watch being efficient, even at night or in thick weather.

Leaving the question of protection against torpedo craft and submarines, until we discuss those vessels, the general system of conducting this watch would be to keep outside the dangerous range of the guns in the forts and battle-ships, though adhering as much as possible to the principle of concentration by so stationing the

ships, and especially the big cruisers, that they could rapidly support one another in the event of a sudden attack. Thus, in fine weather, the scouting force would remain well in the offing, while at night, or in thick weather, it would close in as far as the hostile artillery would permit it to do with comparative safety. The number of cruisers required to watch any particular port will depend on the force of hostile cruisers in that port which they must be powerful enough to drive back, if any attempt to come out; also on the facilities for coaling, which will affect these ships exactly in the same manner as the battle-ships, and on the distance to which the information must be passed.

In the next three classes of operations, the scouts, to be of any real use, must be able to get close enough to the enemy's battle-fleet, to correctly estimate his numbers, and to observe his movements. To do this, it is essential that they also should be in sufficient force to keep their station, in spite of the hostile cruisers, and be able to rely on their greater speed to avoid the battle-ships.

In the last operation, likewise, the only way to effectually screen their own fleet is by preventing the enemy's scouts ascertaining its movements, and this they can only do if they are in sufficient force to drive them under the protection of their own battle-ships.

It will be seen from the above, how important a factor superiority in cruiser power is in the solution of the strategical problem; a superiority which must be still further enhanced by the necessity for link ships, in most cases, to pass information.

The invention of wireless telegraphy has enormously simplified this part of the problem, as by its use a few ships can transmit news across several hundred miles of sea, where previously a prohibitive number of cruisers would have been required to pass it without delay, or else such time taken to carry it by a fast ship, as would have risked the loss of strategical advantage. It is impossible to overlook the difficulties still connected with its use; but so short a time has yet elapsed since its adoption for naval work that we may hope soon to see them overcome by the aid of experiment.

Undoubtedly the greatest of these difficulties is due to the "interference" with the signals which an enemy may cause, and which can never be really surmounted until some system of tuning has been discovered. But with cruisers watching the enemy's ports and driving in his detached craft, there should not be much chance of them getting into a position to interfere with the messages of our ships. Owing to the results of such experiments as have already been carried out being confidential, I cannot enter more fully into this subject; but the fact of so many ships being fitted with a wireless telegraph installation shows that the difficulties are not considered insuperable by the authorities.

Besides the wireless telegraph, every use would naturally be made of overland wires and submarine cables where practicable. Let us take a few examples of these methods of transmitting information.

In the strategical situation brought about by a war with Russia and France, which was described in Part II., it would be necessary, as far as the fleet in the Channel was concerned, to station cruisers off the entrances to the Baltic Sea, Cherbourg, Brest, and any other harbour containing enemy's ships.

With the admiral somewhere between the Start and Ushant, communications would be passed by wireless telegraphy from the force watching the Baltic to some point on the East Coast of England or Scotland, unless use could be made of one of the submarine cables crossing the North Sea. From thence they would be sent by land wires to the Start, where again the wireless telegraph should be used to transmit them to the admiral. If installations were placed on Flamborough Head and the Start, five ships could pass the news from Skager Rack to the former, reinforced by two more "links," if necessary, also to watch the mouth of the Elbe, while two ships in the Channel could either forward that news to the admiral, or transmit the intelligence from Brest and Cherbourg to him, according to his position at the time, so that seven "link" ships would be required, or nine if the Kiel Canal were available for the use of the enemy. Supposing wireless telegraphy to prove unreliable, six times that number would have to be employed to send the information with anything like the same rapidity, even in fairly clear weather; or else, if the news were carried by a cruiser, it would take from 17 to 22 hours, during which time the enemy could have got as far as the Texel, or from the Elbe, as far as the Scheldt; and so would be well down Channel before he could be met, thus greatly increasing his chance of assistance from the French.

A large number of cruisers would be required to work with the Mediterranean Fleet, for, besides having to watch Toulon and Bizerta, they would have to keep up communications with the Commander-in-Chief, possibly at Gibraltar, and, in addition, observe the movements of the Russians from the Black Sea. To pass information from Toulon to Gibraltar by wireless telegraph would only require about eleven ships, and if the line of communications were continued along the North Coast of Africa to Bizerta, another eight would have to be added. Thus nineteen "link" ships alone would be wanted, though this number could be reduced to fourteen by using the submarine cable between Malta and Gibraltar.

But the great advantage in having the communicating ships between the battle-fleet and the enemy is that, if the latter came out, the same ships could keep the admiral posted as to the movements of the hostile ships until he was able to bring them to action; whereas without the "links" the cruisers watching the enemy would have to be continually despatching part of their force to supply him with the necessary information, by which means as many ships would probably be employed as messengers, with a less efficient service for result.

Of course, many situations must arise where it is impossible to provide sufficient craft to furnish "links," and where reliance must be placed on the despatch vessel: such, for instance, as in the strategical situation in the China Seas, where, with our battle-ships stationed near Quelpart Island and the cruisers watching Port Arthur and Vladivostok, the latter would be far too few to permit of "link" ships, especially over the 600 miles where they would be required.

This would not invalidate the strategy in the majority of instances, though it would naturally diminish the certainty of its success; but in some cases it would considerably modify it, such as

in the prevention of the Brest squadron escaping to join the Baltic ships by the North of Scotland, when, without wireless telegraphy, the fleet would have to remain much nearer Ushant in order to prevent that escape and the combination of the Brest and Cherbourg squadrons; also in the strategical example which we took in the Mediterranean, where our fleet was concentrated between Toulon and Spezia, the admiral would have to be informed of the Russian and Austrian fleet moving westward before it reached Cape Bon, or else it would have passed the Straits before he could intercept it.

If the Russian squadron could steam at 16 knots, a cruiser seeing it leave the Dardanelles would have to make 20·4 knots to reach the admiral in time, and then would be unable to give any information as to its probable objective. So, to make certain of accurate enough intelligence, five "links" would be required to forward wireless telegraph messages from the Straits of Messina to the fleet.

Ships could be used for "links," especially for those furthest from the enemy, which had not sufficient speed to join the watching force without running great risk of being captured.

Considering that there are[1] a hundred and two cruisers on the Navy List with a speed of over eighteen knots, of which forty-five are of more than 5,000 tons displacement, there should be quite enough of them to perform scouting duties, even deducting the seventeen now employed on those stations whereon the duties are practically limited to what I have called "policing"—that is, if they are not diverted for the protection of merchant shipping.

By these means the admiral could be kept informed as to all the enemy's movements without loss of time, and so would have the best chance possible of frustating his designs.

Submarines and Torpedo Craft.

We now arrive at the third question, namely, whether the existence of submarines and torpedo craft would prevent the battleships maintaining their strategical position, or the scouts performing their functions.

This is, perhaps, the most difficult to answer definitely, since submarines have even less emerged from the experimental stage than wireless telegraphy, and there are very few data from which to form an opinion of their real value. But it is fairly safe to assume that their moral effect is likely to be considerably greater than the actual damage they will do, since history shows that to have been the case with all similar inventions, from the catamaran to the Whitehead torpedo.

The former was an instrument designed to destroy Napoleon's invasion flotilla, and was tried on 1st October, 1804, outside Boulogne, by the force under Lord Keith. Each consisted of a coffer[2] 21 feet long by 3¼ feet wide with wedge-shaped ends, covered by thick plank lined with lead and caulked and tarred. Outside this was a coat of canvas paid over with hot pitch. Inside was about 40 barrels of powder and other inflammables, also a piece of clockwork which, on withdrawing a peg would, in from six to ten minutes, draw the trigger of a lock and explode the vessel. So confident were the attackers of the certain destruction of the flotilla by these weapons that little attempt at secrecy

[1] On 1st January, 1903.

[2] Description taken from "James' Naval History."

was made either as to their presence or the time of the attack; while the French were so alarmed at the idea of these infernal machines that they protested strongly against the cowardly use of such underhand methods.

Notwithstanding this appeal to the sentiments of chivalry, on the night of 1st October catamarans and fire-ships were towed in to fulfil their object, and five of these terrible weapons were actually exploded, besides four fire-ships, causing the total loss to the enemy of one launch, fourteen men killed and seven wounded.

The story of the first use of the Whitehead in actual warfare is very similar. Most naval officers, I suppose, have heard how the Shah was trying to destroy the Peruvian turret-ship "Huascar," which had been proclaimed a pirate, and how, since the guns had not achieved the desired result, and the daylight was beginning to fade, it was decided to blow her up with a torpedo, after a good deal of discussion as to the morality of the action.

The torpedo was duly prepared, and the guns ceased firing, while all hands waited to see the little "Huascar" blown up; but when it was actually discharged the terrible missile failed to reach its object, much to the amazement of the onlookers. I cannot vouch for the truth of that story as far as the details are concerned, written accounts of the action merely noting that the torpedo was fired but failed to strike; but it illustrates so well the manner in which such inventions are usually overrated that I can quite believe it to be true.

These examples do not prove that submarines and torpedo-boats should be despised, which would be just as bad as to overrate them; but merely show that there is no reason, if proper precautions are taken, for them to create such a panic as would drive our battle-fleet from its station; such precautions as were taken with the Boulogne flotilla, when it was so moored that the vessels could open out to let the catamarans pass between them, and boats were provided to tow them clear; or such as the "Huascar" took when it turned and steamed full speed away from the approaching Whitehead.

When fire-ships, which are about the only type of vessel in past wars with which torpedo craft can be at all compared, were introduced into sea fighting, they brought about the formation of the line-of-battle, because it was found that by keeping the ships in a single line, it was easy to avoid them by opening out to let them pass harmlessly through, and it is in some such way that we must look to solve the problem of frustrating the attempts of the torpedo craft.

Up to the present time, the country which has made the greatest effort to perfect submarines, and which has carried out the largest number of experiments with them in France. Let us see what she has achieved.

Two distant classes of submarines have been built there; one the submarine proper, with a short radius of action, and used chiefly for harbour defence, the other, called a submersible, is a much larger vessel, with a greatly increased radius of action, and is meant to take the offensive. It is with the latter class, therefore, that we are more immediately concerned, when considering the possibility of the battle-ships keeping their station.

[1] At the end of July, 1902, the four submersibles, "Silure,"

[1] These following accounts are extracted from the Naval Notes of the R.U.S.I. JOURNAL.

"Triton," "Espadon," and "Sirène," went from Cherbourg to Brest in a somewhat stormy sea, from which they were obliged to take refuge for a night in the harbour of Perros. During the early morning of the 31st July, they all made an attack on torpedo-boat No. 60, and all emerged successively at the point designated without having been perceived. We know nothing of the state of the sea during the attack, nor how far they travelled under water.

In September, 1902, combined manœuvres between the Coast Defence Battle-ship Squadron of four ships and the submersibles and submarines were carried out at Cherbourg.

At first the battle-ships were supposed to be blockading, and were attacked from inside the harbour by the submarines, and from outside by the submersibles, with the result that two of them were torpedoed. Again we are told nothing about the state of the sea, nor of the distance of the battle-ships from the harbour; but we may note that evidently no steps were taken to protect the battle-ships either by nets or by small craft, such as destroyers.

Next the battle-ships were ordered to force their way into the harbour past the defending submarines, with the result that three out of the four were torpedoed, and, under the circumstances, it does not seem much to the credit of the submarines that the fourth ship succeeeded without damage, for again no steps appear to have been taken to afford them the least protection. These manœuvres merely proved, that with every possible advantage in their favour, the submarines were capable of torpedoing a slow steaming battle-ship.

Further manœuvres were carried out at the beginning of October; but this time the battle-ships, reduced to three in number, were afforded the protection of three destroyers.

During the first day, the ships and destroyers carried out some evolutions off Cape Barfleur, and in the evening, anchored off Saint Waast la Hogue, without perceiving the submersibles. The next day the ships, moving in line at full speed, and flanked by the destroyers, commenced to force an entry into the port by means of a marked passage. Three submersibles were sighted, but they were at too great a distance to interfere in any way with the passage of the vessels; a rough sea also put the submersibles at a disadvantage. It was evident, however, that in any case the speed of the war-ships made a successful attack by the submersibles improbable under the conditions laid down.[1]

The official report on these exercises also includes the following remarks:—"The battle-ships in the Roads of Saint Waast la Hogue represented an enemy to be blockaded by submarines; to gain their positions, the submarines had to leave Cherbourg without being observed; the enemy's torpedo-boats endeavouring to note their departure, and give notice to the Admiral of their approach, in which case the squadron would put to sea to avoid them.

"The submersibles 'Narval,' 'Espadon,' 'Triton,' 'Sirène,' and 'Silure' alone took part in these operations, on account of their greater radius of action, and they had to effect a dive of twelve hours' duration, from 6 a.m. to 6 p.m., and endeavour to gain their positions without being observed.

[1] R.U.S.I. JOURNAL, November, 1902.

"The entrance to be guarded was about two miles wide, and the tidal current was strong, making it difficult for the submarines to preserve the right position. On account of the bad weather, it was only on the third day that they were able to make a move; it was fine and clear, but a strong wind caused the sea to get up, making it necessary for more of the periscopes to be shown than would be the case in calmer weather; their movements were also rendered the more difficult, by the ignorance of the officers as to the position and speed of the battle-ships, whose movements were made as devious as possible, so as to deceive the submarines, and the presence of the two destroyers on the flanks of the battle-ships also increased the difficulties of the attack."

These accounts are slightly contradictory if they really refer to the same operations; but still they give us a much better idea of the true value of these craft, as we are given some information concerning the weather and state of the sea; besides, in these manœuvres, the battle-ships seem, for the first time, to have had fair play, and the conditions to have at all resembled those of actual warfare.

That the submarines achieved nothing under these conditions may have been the result of bad luck on their side; but, by examining the accounts, we can gain a very fair idea as to the reasons of their failure, and so some knowledge of the way to combat them.

The remarks that, "a rough sea put the submersibles at a disadvantage," and also that, "the speed of the war-ships made a successful attack improbable," would seem to show that the utility of these crafts is greatly interfered with by the weather, and a rapidly moving foe, for, if the speed of the old coast-defence ships "Bouvines," "Jemmapes," and "Valmy" made their success improbable, we can almost safely say that the speed of a modern battle-ship or cruiser is likely to render it impossible.

Again, in the official report, we learn that the tidal current made it difficult to preserve the right position, and that the weather prevented their making a move till the third day, when the sea getting up, they had to show more of their periscopes than in calmer weather, presumably running, thereby, more risk of showing their position, all of which tends to prove that even the bigger submersibles are greatly hampered by wind and tide.

Then, ignorance of the position of the battle-ships, and the presence of two destroyers on their flank, increased the difficulties of the attack evidently to such an extent, that, as the report says, "the ships were able to enter and leave the roads several times without hindrance." Apparently, their position was known to be in the neighbourhood of Saint Waast la Hogue, so that their entering and leaving the roads meant that the submersibles were unable to locate them sufficiently accurately, in an entrance two miles wide; while, though we are not told in what manner the destroyers hindered the operations, we may safely conclude that, if two destroyers had so great an effect, a larger number would form a fairly safe screen.

We may, therefore, deduce from these trials that in a rough sea and a tideway the large ships are comparatively secure against this form of attack; while their best safeguards lie in their speed, in evasion and, probably the most reliable of all, in the protection afforded by destroyers.

In 1901, some trials were carried out by the destroyer "Starfish," with a view to discovering the best means of counteracting submarines; but, since these trials were conducted secretly, we can only form an opinion of their value from very incomplete data.

It was stated[1] that the starboard side of the destroyer, was strengthened with plates, and fitted with a crutch to hold a spar torpedo. A barrel was sunk 10 feet below the surface, and the destroyer ran past, rigging out her torpedo, and exploding it as near to the barrel as she could. No details are given as to the strength of the barrel, how its position was marked, the distance from it that the charge was exploded, or the result on the barrel; but we are told that the opinion of those conducting the trial was, that any submarine within 50 feet of the explosion would have been annihilated, and that a destroyer so fitted could certainly do for any submarine coming to the surface within 1,000 yards of her.

Of course, since the trials were secret, we are fortunate in knowing so much; but still, one would like to know more about the means by which submarines can be fought, and experiments that would give us the actual charge of guncotton that would be certain of destroying one within a radius of, let us say, 100 feet, as well as some to show what chance a destroyer, strengthened, if necessary, would have of running down one that was trying to leave a harbour; while the chance of stopping or hindering them leaving port by some description of contact mine or submerged nets and other obstacles, would give greater confidence in dealing with this kind of craft. However, since torpedo craft are in future to be fitted with these spar torpedoes, we may conclude that the experiments proved them to be more detrimental to the submarine than one might have expected. Taking everything into consideration, we may say that, up to the present time, there has been nothing done by submarines to justify any panic concerning them, or that would be likely to prevent the battle-fleet keeping the seas, as long as proper precautions were taken; and these precautions are practically the same as those we should adopt against the ordinary torpedo-boat or destroyer.

There are two ways in which destroyers can be used to protect a battle-fleet against torpedo attack—namely, by being formed into a cordon round it, or by blockading the hostile torpedo craft so that they are unable to put to sea.

The only advantages that the first method can possess are that possibly fewer destroyers need be used, and that they are more certain of being available to assist the battle-ships in action; but, on the other hand, the presence of these small craft is bound to be a source of anxiety to the admiral in anything like stormy weather, and they will run great risk of being fired at by their own ships at night through being mistaken for the enemy's boats if they get too close to the battle-ships, especially if the hostile craft should actually attack; whereas, by the system of blockading, there is much more chance of preventing the enemy's boats getting to sea and destroying them before they reach the neighbourhood of the battle-fleet; the destroyers in no way hamper the movements of the latter, in addition to which they afford protection to the blockading cruisers, besides being a menace to any ship or squadron of the enemy trying to leave the harbour during the night or in thick weather.

[1] Account taken from Brassey's "Naval Annual," 1902.

The efficiency of this method was practically demonstrated in the manœuvres of 1899, when, owing to the blockade of the A Fleet torpedo-boats in Waterford and Queenstown by destroyers, the B Fleet was able to pass twice along the South Coast of Ireland without being in any way molested.

I said that with the cordon plan, possibly, fewer destroyers would be needed, but, if they are not to risk destruction by their own ships, they are bound to keep a good distance from them, and, if they are to make certain that no hostile craft passes between them in the dark or in foggy weather, they must not be many cables apart, so that their number would have to be fairly considerable; besides, a cordon such as that will greatly diminish the battle-fleet's chance of evasion, which is its secondary defence, as the destroyer protection is its primary, and the light Q.F. armament of the ships its tertiary.

Adopting, then, the blockade as the *rôle* of the destroyer, as well as of the cruiser, the two classes of vessel would be of tremendous assistance to one another, for the cruisers would prevent the destroyers being chased off in clear weather, while the destroyers would protect the cruisers from torpedo attack at night, or during a fog or mist. In addition, the cruisers would act as parent ships to the small craft, and could render them assistance in stores, medical aid, and even coal if required.

Where destroyers were required to blockade torpedo stations containing no large ships, such as many of the *défense-mobile* stations on the French coasts, they would be without the assistance of the cruisers, in which case it would be advisable to have a torpedo depôt-ship to accompany them; and as this ship need be neither powerful nor speedy, having little to fear in the way of attack, so long as the watch on the enemy was maintained, vessels might well be employed for this purpose which were unfit for more important duties.

Without doubt a considerable number of destroyers will be required if this service is to be conducted efficiently for any length of time, for allowance must not only be made for replenishing them with coal and stores and for ordinary repairs, but also, in all probability, for a considerable number of breakdowns and other accidents, such as are practically certain to occur where such light craft are kept constantly at sea. The actual number that should be stationed off any particular port must depend principally on the width of the entrance, since it is of the first importance that none of the enemy's ships or small craft should slip out unobserved, even during thick weather, when on the destroyers would chiefly rest the duty of watching. At such times these small vessels must be prepared to run a certain amount of risk, if necessary, in order to close in to the narrowest part of the entrance, relying on the obscurity, which they should be ready to take advantage of as much as the enemy.

Also, when they were employed in blockading at any distance from their base, such as off Toulon, the entrance to the Kiel Canal, or the Skager Rack, a temporary base, secured within a hundred miles of their station, wherein they could seek shelter from storms and coal, would be of immense assistance to them, and enable them to remain much longer on their stations; and during such times as they were forced to seek refuge therein, they would rely on the cruisers for protection.

SUMMARY.

As far as it is possible to foresee, the strategical plan described above is perfectly feasible, and is not attended with greater risk to the ships themselves than is inseparable from a state of war. For with a combined cruiser and destroyer watch on the enemy's ports, and linking-ships stationed to pass information to the Admiral, it would be a matter of considerable good fortune for the hostile craft to get to sea unobserved, to find the battle squadron, and to deliver a successful attack. The chances would be so much against them that the risk would be quite justifiable, since it is absolutely impossible to conduct a war without risk.

The large cruisers watching the hostile harbours would, in fact, be in greater danger from torpedo attack than the battle-ships, since their position would be more accurately known to the enemy and more within reach of his small craft; but, in weather favouring such attack, these large ships would naturally withdraw to a fairly safe distance, and leave the watch to the destroyers, backed up by the other light craft; more especially since the conditions which favoured the adversary's torpedo-boats in leaving the harbour would also equally favour our own destroyers in attacking their large ships if they attempted to put to sea.

With the big ships close up in stormy weather and the small ones close up in thick weather, and moderately close at night, while in fine weather the watching force kept near enough to observe the entrance without being within dangerous range of the shore artillery, there should be little chance of either big or small vessels leaving the harbour undetected, or, with anything less than the battle-ships, unattacked. And when the battle-ships did come out the same watching force could inform the Admiral, by means of the same linking-ships, of all their movements, until such time as he could bring them to action. And, owing to the superiority of our battle-fleet, brought about by adhering to the principle of concentration in the strategical distribution of our forces, the chances of victory would be very much on our side. Before the battle the cruisers and destroyers, which had formed the watching force and link-ships, would have rejoined the fleet, and would be available to act as auxiliaries in securing the victory, and this without having hampered the movements of the battle-ships, as they must have done had they accompanied it while cruising.

The experience gained in the combined manœuvres in the Mediterranean last year seems at first sight to be all against the practicability of this form of cruiser and destroyer blockade; and, since those operations are the only ones yet carried out at all in accordance with these ideas, we must give all due respect to the results obtained.

But besides the impossibility of ever adjusting manœuvre conditions to represent those of actual warfare, it is hardly conceivable that, even if a blockaded fleet wished to escape in either of two entirely opposite directions, it would be equally important for the blockaders to guard both routes, and consequently the blockading admiral would concentrate his battle squadron in a position to cover the more important, while prepared to chase if the escape were made by the other; but it would surely be imprudent to divide his force

so that his two battle squadrons contained only six ships in each, while the enemy possessed eight to bring against either of them.

Then the tactical condition that any blockading ship which approached within 8,000 yards of the entrance could be ruled out of action was decidedly against the blockaders, since at night, or in thick weather, it is certain that torpedo and other light craft could run in very much closer without much risk of damage from the forts and batteries, and the closer they could approach the better they would have been able to support one another.

But the chief cause of the failure of the blockades to bring the escaping fleet to action was undoubtedly due to the watching-ships being unable to find their own battle-squadron at the critical time, so that, although the enemy was seen to be escaping, many hours were lost before the Admiral heard of it.

It is interesting to note that no difficulty was apparently found in coaling the fleet, and also that, owing to the good use made by the escaping ships of their wireless telegraphy instruments and search-lights, all attempts at signalling by the blockaders in their vicinity were rendered abortive.

Conclusion.

I have attempted to show that the system of blockades as adopted in the Napoleonic wars, was very risky, and certainly not in accordance with the first law of strategy, which is that of concentration. And it was only the demoralisation and inefficiency of our antagonists that prevented them taking advantage of our weak and scattered position.

On the other hand, I have tried to show how our fleets could be so disposed strategically as to take full advantage of their numbers, and to be practically certain of meeting the enemy in superior force; also that the inventions of modern times are by no means likely to prevent the success of such strategy, but rather to help it, modern war-ships having an immense advantage over the sailing ones in capability of keeping their stations, while coaling need present no insuperable difficulty. Wireless telegraphy should prove of great assistance, and submarine boats are likely to be far more a moral than an actual drawback, if properly guarded against.

The most unfavourable item is the number of cruisers that would be required; but, after all, we have the cruisers, and surely it is far better to employ them on this, their proper duty, of scouting, than to risk success by using them as convoys and patrols. It must ultimately be far more profitable for the shipowners and merchants to have command of the seas eventually assured than to hazard the loss of it for the sake of protecting a few thousand, or even million, pounds worth of merchandise.

It will be seen in referring to the chart, that the positions of the link-ships, and of the cruisers watching the various ports, are extremely good for protecting our own merchant shipping, and for intercepting the enemy's.

A cruiser watch on Toulon and Bizerta, with a line of "links" along the north coast of Africa, and a small cruiser squadron in the eastern basin of the Mediterranean, would probably be the best method of protecting commerce in that sea; while a watch on all the Atlantic ports, and the entrances to the Baltic Sea, with communicating cruisers, and also relieving ones, continually moving to and from their

station, in between, would not give the hostile commerce-destroyers much chance of either getting to sea, capturing prizes, or getting back to port with those prizes, and this state of things has been evolved for the legitimate pursuit of a definite strategical plan.

In other words, where the naval lines of communications coincide with her mercantile, the protection afforded the former should suffice for the latter, and, where such is not the case, the merchant-ships must trust to evasion, and to the defence afforded by the watch on the hostile ports, which, considering the distance of the majority of such routes from the adversaries' bases, should be reasonably sufficient for their safety.

There is one argument against this strategical plan which has been advanced as an objection to all big concentrations of force, which is that it would be impossible to tactically handle so large a fleet in battle to the best advantage; in other words, it would be impossible to keep such a big fleet in single line, wherein alone the full effect of each ship's fire can be developed.

There is really nothing in this argument when it is examined into, for it will either be a case of two fleets of fairly even numbers meeting, or of one fleet being considerably more powerful than the other.

In the first case, each fleet would have to be divided into squadrons of manageable size, the commanders of which would, after having been told the Commander-in-Chief's ideas previous to the action, be practically independent; exactly in the same way that they were in the Dutch wars, when the opposing fleets frequently contained over a hundred sail in each. In the second case, it would almost certainly be a chase, when the fastest ships in the stronger fleet would probably attempt to head the enemy by turning their flank, and when the ships would come into action according to their speed.

Such then is the manner in which the strategical objects, formerly pursued by means of blockading, can be best attained, if we take those objects in their more immediate sense of preventing any injurious operations by the enemy's fleet.

But, in the larger sense, those objects were, and always must be, to destroy the Sea Power of the enemy; and both blockades and the scheme here put forward, tend to produce a deadlock by the enemy refusing to put to sea, which might last for a considerable time if some steps were not taken to end it. The advantages of such a situation are always on the side of the blockaded force, since the fleet which keeps the sea runs the greater risk of loss by torpedo attacks and similar raids, as well as from accidents, besides being put to the greater expense for repairs and maintenance; so that the question must arise sooner or later as to whether it would not be less risky and more economical to attack the enemy's ships under the protection of their forts, and behind their other defences.

Since Nelson's destruction of the Danish Fleet at Copenhagen, probably the best example of the futility of harbour defences as protection for the shipping against a determined foe was that of the destruction of the Confederate ironclad "Tennessee," and gun-boats in Mobile Harbour, in 1864.

The entrance of the harbour was defended by the powerful Fort Morgan, mounting 38 heavy guns, besides a smaller fort on the other side of the channel; also by piles and mechanical mines, or fixed torpedoes, which narrowed the navigable entrance to within

100 yards of Fort Morgan. The "Tennessee" was a wonderfully strong vessel for her day; indeed the Confederates had great hopes that she would be able to raise the blockade of the port. She was protected by armour for 79 out of the 209 feet of her total length, which armour was from five to six inches in thickness, and was sloped at an angle of 34 degrees, the lower edge forming a sharp projection two feet below water, against which the wooden Federal ships might ram in vain. She mounted four 6-inch and two 7-inch rifled guns, which far outranged the Federal artillery, the smooth-bore shot from which were quite unable to penetrate her armour.

Against such formidable obstacles Admiral Farragut took the Federal ships, most of which were wooden steam sloops and gun-boats, with only four small ironclad monitors mounting twelve guns between them, the attack being completely successful, though one of the monitors was sunk through striking a fixed torpedo.

This shows what could be done forty years ago, and it remains for us to inquire what modern invention is likely to make ships invulnerable inside their ports.

The advantages which the shore artillery have gained consist of the better methods of protecting and accurately aiming the guns, since the increased power of the guns themselves equally affects both sides. These are disappearing carriages, high-angle fire, automatic sights, and accurate range-finding apparatus. But, on the other hand, the ships have still the choice of time and place of attack, so that although these latter inventions have made it practically impossible for them to attack modern fortifications without serious risk, their greater speed and handiness, as compared with the old sailing vessels, have given them compensating advantages in being able to avoid the danger zones of the land guns.

For instance, where Nelson would have had to wait for a fair wind to take him into a harbour, and then have to trust to a shift of wind or to kedging to take him out again, with all the danger of sailing unhandy battle-ships amid shoals and sandbanks, and under the fire of the forts, the modern ships could, as far as the guns and shoals are concerned, slip past the forts at night or in misty weather, carry out their attack upon the vessels inside, and get back to the open sea without running an atom more risk.

The immense advantage which steam gives a force in this kind of operation was well shown in Admiral Farragut's attack on Mobile, as well as in the passage of the Mississippi forts by the same admiral in 1862, which caused the fall of New Orleans into the hands of the Federals.

In addition to the artillery, the defences to be overcome are mines, torpedoes, booms, and search-lights, which, although adding to the danger of the attack, are certainly not insurmountable, and should not affect the operations any more than the corresponding obstacles, such as mines, fougasses, and entanglements would an assault upon a position on land. For nearly all these obstacles could be swept out of the way of the attacking force by sending a few old merchant-ships, the loss of which would be immaterial, to charge them in advance, dragging heavy sweeps between them. Not only would they clear away mine-fields, smash up booms, and, perhaps, run down submarines, but they would also draw the fire of the forts and of the Whitehead and other

mobile torpedoes, as well as the beams of the search-lights, off the real attack, and when any of them were so damaged as to be in a sinking condition, it would be easy for them to run clear of the channel.

It is doubtful whether the shore search-lights would not be as much help to the attack as to the defence, especially if their positions were known to the former, as then they would both act as pilotage leading marks, and help to show up the defenders' torpedo craft.

If time and opportunity allowed it would no doubt be safer to carry out counter-mining operations, and to attempt to destroy the shore ends of the cables and the torpedo stations; but it would probably be better not to do so than to chance spoiling the suddenness of the attack, though the advisability of such operations must depend entirely upon local conditions.

It is in the defence of a harbour against an attack of this kind that the submarine proper, as differing from the submersible, is expected to be most useful; but it is very doubtful, judging by what these craft have already accomplished, whether they could effect anything in a rush such as I have described. For if they were not run down during the preliminary charge, or put out of action by the sweeps, the confusion would be so great that they would be in great danger from collision, and, even if they did get an opportunity of firing, they would run a great risk of mistaking friend for foe.

It is hardly necessary to point out that, for the purpose of such an attack, old and otherwise obsolete vessels would be nearly as useful as those of the latest type for supplying the gun power, especially as the ram and torpedo would be more effective weapons in such a scrimmage than the heavy artillery, and high speed for the big ships of much less importance than handiness. In this way an immense amount of damage might be done to the enemy with comparatively little danger to our own naval strength, while the conditions of such an attack would certainly not be wholly favourable to the defence; indeed, the attacking force should run no greater risk than Nelson's did at Copenhagen.

If such attempts failed, or were decided to be impracticable, the only alternatives would be the far more lengthy and expensive operation of reducing the place by a combined naval and military attack, such as that of the Japanese on Wei-hai-Wei in 1895, or of the revolutionists on Valparaiso in 1891, and the prolongation of the state of deadlock while our forces made raids on the enemy's country and oversea possessions.

Against a strong military Power it is probable that the latter alternative only could be adopted, which would mean that the war would last until the loss of their oversea possessions forced the enemy either to attempt to obtain the command of the sea or to sue for peace.

THE "NEW PACIFIC" FROM A STRATEGIC POINT OF VIEW.[1]

By T. MILLER MAGUIRE, M.A., LL.D. (Barrister-at-Law).

Friday, 18th March, 1904.

Field-Marshal the Right Hon. F. S., Earl ROBERTS, V.C., K.G., K.P., G.C.B., O.M., G.C.S.I., C.C.I.E., etc., in the Chair.

THIS lecture was originally intended to have been delivered on Monday, the 8th of February. For several reasons I am very glad indeed that I was not called upon to address you on that occasion. One reason you will all appreciate at once, and that is, that on the 8th of February we could not possibly have had the presence, as Chairman, of one of the most distinguished of living soldiers, the noble lord whom I have the honour of addressing; one who is not only a theoretical soldier and a writer of history, but who is also a maker of history. He has conducted the operations of the most famous of all armies that ever manœuvred in any part of the world, the Army of the United Kingdom of Great Britain and Ireland. The services he has rendered to his country in India proper, in Afghanistan, and in South Africa, are celebrated.

It is a curious coincidence that ever since the very dawn of history it has been a material object with all great leaders of the human race to acquire influence, if possible, over the territory in the great central Asiatic peninsula, so remarkable for its ancient art and for its various populations and religions, and where was probably the origin of all European culture. It has been their object always to get possession of Hindustan. Since the Middle Ages it has been the object of every European race also to get control whether by the Mediterranean and Red Sea, or overland by the Euphrates Valley, or by the South African route, of its wealth and its unique strategical command. It is a curious historical coincidence that for a lecture on the New Pacific, or as it may be called after the events of the last few days, the "Newest Pacific," we have in our Chair a military chief who has reversed the normal course of invasion of India from the north-west, by marching on Kabul and Kandahar from the Indus, and has also secured for us the possession of the South African key to the East. The fact that we have Lord Roberts in the Chair justified the postponement of the lecture.

[1] This lecture was delivered extempore and illustrated by large wall maps, but it can be followed in any good atlas.

Another reason is, that a considerable amount of history has been made since the 8th of February. Strange to say, on that very day we had a most striking modern illustration of sea power, the first sea fight in the war with Japan and Russia. The war between the great island Power of the Far East, and the greatest land Power of the West has now been going on some six weeks, and it must be interesting and satisfactory to members of this Institution to know that so far they have no reason to alter their opinions or to apologise for the warnings which again and again in this room they have given to their fellow countrymen. I say that the war in the Pacific between the island Power Japan and the continental Power Russia has verified the most ancient oracles of time in the most striking manner conceivable within these six weeks.

What are the lessons of history and of strategy most invariably set forth here and everywhere, set forth in the words of the ablest historians, set forth by Alexander the Great, set forth by Julius Cæsar, by the Spaniards at the beginning of their power, and by the great American Mahan, in his explanation of embodiment of sea power in our Nelson. What are the lessons? The first is: Let no nation expect to be great that is not always prepared and ready on a just occasion of arming. Supposing Japan had not been prepared and ready on the 8th of February last, what would the position of Japan have been compared with its present position? In this hall always the first idea of the Council of this Institution and of the speakers has been to pray all persons, political and military, who are responsible for the four-hundred millions of the human race under the British Crown, to make it their first business—leaving aside all party, political, and other considerations—to ask this question, and to get a proper answer:—Are we ready to talk with our enemies in the gate *now;* not waiting on Providence, but now? If Japan had not been ready on the 8th of February, the position would have been very different now. That is one strategic lesson which has been illustrated more fully by the war since this lecture was postponed. It was explained by Lord Bacon in his essay on "The True Greatness of Kingdoms and Estates," in the year 1612. I wonder whether there are any gentlemen in this room who have not read that essay. If so, I would strongly advise every gentleman, and lady too, to read it forthwith, and most attentively. It applies now exactly as it applied in the days of Queen Elizabeth and James I., when their ancestors were commencing that destruction of the Spanish Empire in our narrow seas, which Admiral Dewey consummated at Manila in the Pacific in 1898. That lesson is, that the command of both Indies — America at that time was known as one of the Indies — the command of both Indies, the Far East and the Far West, is but incidental to the command of the sea, and that the principal dowry of Great Britain was the command of the sea. Both of those verities were announced in the year 1612 by the greatest of Englishmen in the realms of science and philosophy, and we repeat them to-day before one of the most famous British soldiers. "To be master of the sea is an abridgement of a monarchy." Why? Because as Bacon explains, very few Powers are entirely inland. Now, Russia is not entirely inland, for you will see on the large map of Asia, all these ports and bays from Kamchatka to the Yalu. Had Russia been wholly inland, the fight between Russia and Japan would have been a fight between the whale and the elephant. But as Lord

Bacon says, most Powers somewhere touch the sea, and thence can be harassed by sea power; and a bone of contention between the great land Power and the new sea Power was a peninsula, as has been the case in many a former war. Lord Bacon goes on to say that inasmuch as all Powers are not wholly inland, but in some places touch the sea, he, who is a master of the sea, can take as much or as little of the war as he pleases. He can assault his enemy's lines of communications; he can threaten his enemy's forces in the peninsula; he can made raids; he can embarrass the enemy's commerce; he can excite ill-will among the people subject to his enemy's rule, especially if they are a great distance from the centre of his own State; and he can take as much or as little of the war as he pleases. The insular sea Power as long as it can feed its people and retains naval command, is, on the other hand, invulnerable. Therefore, not only is an insular sea Power in a position to defy invasion, but it can also harass, distress, worry, and exhaust a great land Power, however great, till it makes peace. These two lessons of strategy, whether in the East or in the West, have been continually preached in this Institution. In fact, they can be learned in any school, except an English fashionable public school. They are taught in the United States' schools by the shores of both Atlantic and Pacific, how, for example, whereas Spain could not injure England in 1588, the English singed the fringe of the King of Spain's beard from Cadiz to Portobello.

Now another strategic lesson, that there is not the slightest use of an insular Power, or any other form of sea Power, being content with sea power alone. Even if it be not an almost universal empire like the British, with subjects in every part of the world, it must have means to be able to supplement its command of the sea by efficient forces ready to land at once, complete in everything needful for a soldier; not expeditions to land and then to play the fool, wondering what kind of weapons they will get next or to retreat, but to land in a business-like effective manner, armed cap-à-pie, fit for such enterprises as they have in hand, and able to stick to the business until the enemy be worried into peace, or at any rate seriously embarrassed. This doctrine was preached here for twenty years by many lecturers, and I say that the lesson of this war so far is not only that you must be prepared to crush an enemy mercilessly and continually at sea, but must also be prepared to follow up that success by an effective land expedition. An empire like ours — or any empire in any age — could not carry out its purpose, and no one knows that better than the noble lord in the Chair, by mere command of the sea. In the 17th and 18th centuries, we followed up our exploits at sea by constant expeditions to every part of the trans-oceanic territories of our enemies. In the time of our wars with Spain and Holland, we followed up our sea power by expeditions to India, America, Africa, and so forth. The same thing occurred in the Roman Empire. Mere passive defence would never have exhausted the Carthaginians, even if the Romans had the command of the Mediterranean. This had to be followed up by an attack on Africa itself and Hannibal was beaten at Zama. Hence, so far, we have had three strategic lessons in the war in the Far East. One, that no nation can expect to be great that is not ready on a just occasion of arms. Secondly, that the command of the sea is the epitome of greatness. Thirdly, that command of the sea must be supplemented at once by having ready a sufficient number of forces for

expeditionary offensive purposes. These wars, however, whether in the Mediterranean, the Atlantic, or the Pacific, may be protracted. You must not imagine that you are suddenly going to catch by the throat and throttle a great Power. Napoleon was in Moscow fighting against Russia in 1812. The Russians were in Paris in 1814. It is not our business here to take sides with either Japan or Russia; we have not the least prejudice one way or another. We merely discuss strategy of the Far East as illustrating other strategy, and as important in itself from a purely scientific point of view, without taking any side whatever, and in order to gather certain lessons for ourselves with regard to the future, just as lawyers search for precedents.

Before Japan adopted this new combination of the traditions of the old Eastern times, and the most accomplished use of science of the most modern times, her people put their whole house in order. They did not proceed in a spasmodic, fitful, capricious, partisan way. They had had quite enough of being fooled by European Powers and America. They were a proud, high-spirited nation. They had adopted for ages an unassuming, retiring, philosophic repose, domestic ease and fantastic art; but the instant they found this course did not pay she changed it. Why did Japan change? She had not the smallest intention of adopting the policy of going forth on the sea as the British have done for so many ages, her people had not the records of the predecessors of the Saxons or the Vikings of Scandinavia or the Dutch. The Japanese had no idea of sea power, and no idea even adopting a wide commercial policy as did the isles of Greece, "where grew the arts of war and peace." They wished to live quietly within their own isles. Some gentlemen here, especially belonging to the Navy, are well aware that their very ships were constructed purposely to prevent them from becoming anything like a sea Power, or taking action outside their own islands. The achitecture of these ships prevented excursions out of their narrow seas. But other folk would not let them alone, they could not rest in peace. They were bombarded in 1862 and 1864. Then they mewed their mighty youth, they revolutionised their whole system. Their ruler was a man of tremendous energy and character, and under him they adopted the finest system of education that could be possibly devised. They were not afraid of exhausting the intellects of their younger sons, and were not disposed to let them spend time upon football or cricket, which they should have spent in their studies. You have the fact that the Japanese thought that every man's immortal mental part was at least as worthy of care and attention as his mortal physical part, although the physical man was not to be neglected. They devoted themselves to profound study and scientific investigation, and they adopted a system of universal military service of education, so that there might be a reserve of strength in case of war. Again I must say I am not advocating their policy or any policy to-day; I am simply stating that so it was; but I think I ought to add to that that a hundred years before, when these isles were, in the opinion of Europe, about to be forthwith overwhelmed by the greatest military genius of any age — Napoleon — or one of the greatest geniuses, at any rate, the British people determined to win command of the sea and won it. They then determined to get a good striking force. They got one. They were able to send expeditions against the Mahrattas in 1804-5 in India, and even greater expeditions still, and they adopted a system

of military service which provided that every able-bodied man was a Regular of the Navy or the Army or a Militiaman or a Volunteer. As Mr. Pitt said, speaking in the House of Commons in March, 1804, this was done, so that in the unfortunate event of losing command of the sea, or in the event of even a temporary invasion, no Englishman of either high rank or low rank, rich man or poor man, the man of learned occupation or the horny-handed son of toil, would have to go about wondering what he was to do to help his country in its distress. They would teach him beforehand, said Mr. Pitt. So did the Japanese.

Do the Japanese deserve success? You will find that they do in a book by Vladimir, called "The Chino-Japanese War." The quotation I am about to read refers to the question of whether they deserved success as against China in 1894 and 1895. He proves that they did. I will add that in the intervening nine years they have deserved success still more by devoting themselves heart and soul to preparation for another probable disturbance. The quotation is as follows: "If the future of Japan promises to be great, it must be confessed that Japan deserves it. For the last thirty years the best part of the nation has been quietly but steadfastly working to rise to the level of the foremost nations of the world." That is a noble enterprise for this people far away in the East to accomplish. "The youth of Japan have been exploring the whole of the world in search of everything that might contribute to the welfare and growth of their country. Every steamer to Europe and America had Japanese passengers of every class, all bent upon study and self-improvement. No branch of human activity had been neglected, and each nation has had to yield its best knowledge to the inquisitive curiosity of the Japanese. Even Ceylon had been visited by people wishing to improve their knowledge of religion." I do not know that I would have gone to Ceylon myself for that purpose; but the report was, that they had seen no religion anywhere one whit better for mankind than their own. "During the last generation, Japan has been like a vast beehive, whose inmates were busy everywhere gathering the essence of the best they saw, and it is just that they should begin to enjoy the fruits of their industry." That was said as to the war of 1894. It is too soon to prophesy what the results of the present war will be, but clearly up to the present we will be justified in saying that the Japanese have been enjoying the fruits of their industry. That for the yellow race in the Far East, which is now at war in the Pacific.

Their Knowledge is their Greatness.

And now we come to the advance of various nations to the Pacific. It is strange how news and tradition travel in the most extraordinary way throughout the East, with which the Chairman has such a profound acquaintance. I have been studying these points all my life, and I have never been able to make out the system that prevails and how the news of important incidents spread by some occult methods from the Crimea to Lucknow. I heard of a very curious instance in which the news of a battle in Africa (the Atbara) was carried in a few days right across the continent to the West Coast, before even our officers could get it by telegram from home. All Eastern races had had a tradition that wealth untold was accumulated beyond the passes leading from Tartary to India, and that further

East was a mighty ocean which annually deposited treasures on its shores. This idea was reflected in the fabled expedition of Bacchus into the Valley of the Ganges. The expedition of the great Assyrian Queen Semiramis found the passes, and there have been twenty-two recorded invasions of India seeking after wealth and plunder, from the days of Darius and Alexander and his successors. Alexander himself, when he got into the Punjab, made a speech to his soldiers, in which he said, "I am going to bring you to the great ocean, and we shall come back to Macedonia, covered with riches which it casts upon the shores." But the troops said they had gone quite far enough; they were standing on earth's utmost verge, and they obliged him to return to the Euphrates. I shall be able to illustrate the desire which the people of Europe and of Asia, and recently of America, have had to get to the Pacific. It was the Cossacks who first brought the Russians to the Pacific in the 16th century; towards the Pacific, not to it. In the 16th century, in the days of Queen Elizabeth, the Cossacks, under Yermak, had got as far as the Irtysh River. They were fighting the Chinese in the year 1678. They retired, and they did not come back until the days of Queen Victoria.

Various events retarded the progress of the Russians. They were stopped for a while by the Crimean War. A few years after Lord Roberts went to India, they began their movements again. They defeated Schamyl, finally in 1861 passed the Caucasus, and in 1864, or soon after, you will find them going ahead eastwards. In 1858 the Russians took the left bank of the Amur, at a time when the Western European Allies were at one of their periodical bombardments of Pekin, a mode of amusement which has been carried on with some regularity since the 13th century. When any military "world conquerors" were hard up for a change, they went to Pekin — when the allies of Western Europe were bombarding Pekin as usual in 1860, the Russians came down south of the Amur to the north of Korea, and now we have the Russians on the Pacific.

Having started to drive the Mongols across the Ural Mountains at the end of the Middle Ages, they reached Vladivostok in the time of Queen Victoria. But they were making another march simultaneously—a march which some of you gentlemen began to oppose with a counter-march. They got from Moscow across the Caucasus, around the south of the Caspian to Bokhara, through Samarkand, and as far as the Pamir, and there they are now touching the British. They made a very satisfactory advance between the close of the Crimean war and the time when you gentlemen went to Chitral in 1895. That was not a very long time, only about forty years, and that sufficed to make them master of the realm of Tamerlane and his successors.

At the present moment, I hear on good authority that they are making another railway by the aid of the Chinese, the best railway makers in the world, who constructed the railway across the United States to the Pacific. They are now constructing a line through Mongolia for Russia, which will take Pekin in flank. I have brought Russia to the Pamir, to Afghanistan, to the old capital of Tamerlane, and then to Port Arthur and Vladivostok; but in the meantime the course of empire was taking another turn in another direction. After

the Turks took Constantinople in 1453, all central Europe was engaged for about two hundred years in stopping their progress towards Vienna. As the Crusaders had been driven out of the Levant, and the Turks had taken Egypt and Syria, and the Mahommedan religion prevailed there, Christian Europe was rather embarrassed for an outlet to the wealth of Asia. Accordingly we have Columbus sailing to discover another route, and in doing so he happened upon the West Indian Isles, and his followers of various races explored and annexed the continent of America. In the year 1513 the Pacific was discovered, and thus we have reached the Pacific from another side of the world, and we shall see great things presently. A distinguished warrior, Vasco Nunez Balboa, came along from the isles of the West Indies, and he crossed the Isthmus of Panama, and he saw the Pacific from the peak of a mountain, Quarequa, in September, 1513. That is alluded to by Keats, in his celebrated sonnet. The poet was describing the extraordinary impression made upon his mind by reading Chapman's Translation of Homer, the poet who gives the first account of a European expedition against Asia. He says, when he opened Homer:

> "Then felt I like some watcher in the skies,
> When a new planet swims into his ken,
> Or like stout Cortez when with eagle eyes
> He stared at the Pacific—and all his men
> Looked at each other with a wild surmise—
> Silent, upon the peak in Darien."

That was the discovery of the Pacific. Now the daring Spanish had realised all their wildest dreams. But it was not Cortez who led them, it was Balboa. He precipitated himself into the ocean, and waving his sword in every direction claimed for God, the Holy Church, and the King of Spain all the riches of the new ocean and all the people dwelling by its shores. Magellan soon came through the straits which bear his name into the same ocean, which he called Mar Pacifico, and after three months' voyage reached the Philippines; and we have here the Far East touched again from the Far West, before the arrival of the Cossacks, on the other side of the Far East.

There is something very curious, very weird almost, in all this. Here we have the Portuguese, Spanish, British, Dutch, precipitating all their best men eastward and westward, in search of gold. They found it on this occasion. Precious metals beyond all previous estimate abounded in Potosi and Mexico, far surpassing the wealth of the gorgeous East even, where she showers on her "Kings barbaric pearl and gold," as Milton says. Cortez destroyed Mexico, Pizarro destroyed Peru; but they sent galleons full of gold to their king and homes. The whole of the Pacific is absolutely lined with gold; there is wealth indescribable everywhere, but unfortunately volcanoes and earthquakes accompany it. Here are gold and silver and precious gems unlimited, herds, corn, spices, wool, nitrates—everything that man desires—along the whole Pacific. The valley of the Orinoco could support forty millions of people as easily as Belgium could support four millions.

North of Mexico the English founded thirteen States on the west of the North-American continent. These thirteen States separated from England in the year 1783. They saw perfectly

clearly that they could have possession, if they were wise, and prudent and daring of almost the future of humanity, when they separated from Britain in 1783. They knew that England would soon be involved with their own French allies, and England was involved in a tremendous example of sea power ten years later, which lasted for twenty-two years, against the French Revolution, and Napoleon from 1793 to 1815, wars which cost a thousand millions of money.

Well, they separated, and to the Pacific they would go as soon as it was possible. There was some little difficulty in settling down, and forming new States, and so on, which might have tried or exhausted other young communities, but which was nothing to people of their enterprising genius. They "bluffed" the British Cabinet in 1783, in the North-West, from Ohio to Illinois, out of the whole territories from New York State to Michigan, and made further progress towards their goal.

A very strange event occurred in 1803. The French had got Louisiana, and the whole basin of the Mississippi from the Spanish, but they were afraid the English would take it, and so they sold the whole realm for fifteen million dollars to the United States of America, and for that amount these became the possessors of the whole valley of the Mississippi as far as Wyoming and Colorado. When Napoleon lost Egypt two years before, he said: "I am losing Egypt, and I am losing the Empire of the East." The British have got it now, and they may hope, according to Napoleon, to retain the Empire of, at least, part of the East. But when, owing to the pressure of English sea power, he sold the Mississippi Basin to the United States for a few millions of our money, he said: "I am now parting with the future empire of mankind; he who holds the valley of the Mississippi, will ultimately rule the world." Several American authors entirely agree with that view, and some recently assert that they are quite able to manage the entire civilised world, and that Western Europe will be at their mercy when they please to become the first sea Power. They are making efforts in that direction as I speak. They went on smoothly, until they got Oregon, 1846, and that brought them to the Pacific. Canada, by that time, had not got so far; it had not expanded between the great lakes and the Rocky Mountains. Then the Americans annexed Texas. The value of Texas rangers, Texas mules, and Texas liars you know, as did General Stonewall Jackson in the Civil War. Then America fought and defeated Mexico, and, to cover the humiliation of the Mexicans, they gave them fifteen million dollars. For what? For Arizona, Nevada and California. Accordingly they were able to say a few years later, "We have got to the Pacific, and this will enable us to control the world's trade in due time." Quite independent of these fine prophetic ideas, you will admit that California was very good value. They received Nevada, where the "silver kings" fructify; they got Utah, where the Mormons have Salt Lake City; and California and the Harbour of San Francisco, the only good or tolerable harbour on the Pacific, south of the Canadian frontier, and all for fifteen million dollars. It was a good bargain, as they extracted £200,000,000 sterling, out of California, alone within a very short period. They gained territory by arbitration from England. Whenever England goes to arbitration it loses; it would appear that England goes to arbitration in the interests of humanity, to show a

good example of moderation and self-control to other races, hence it surrendered the island of San Juan, in 1872. The United States bought, from Russia, Alaska. They just missed acquiring British Columbia, in addition, but Canada managed to get hold of it. In the interests of humanity, in 1898, they went to war with Spain, and that put them right across the Pacific to the Philippines, and, as an American writer said, "the centre of the United States was changed from Kansas to California." They took Cuba. They made the Northern-Pacific Railway, and the Central Pacific, and the Southern Pacific to San Francisco. I would advise you to read Mahan's books, which are the very best books for any English student to spend some of his time on, and especially this book, "The History of America in Sea Power," by Captain Mahan. I have marked a lot of passages, but I have not time to read them. The Editor tells me that I may put a lot of matter in the Appendix, and it is a good thing I can do so, because otherwise I should go on for hours. Mahan told them that if they proceeded in an inefficient fashion, other Powers would have the entrances and exits to the Panama Canal, and consequently they must take Cuba or Jamaica. They took Cuba, and I am rather pleased at their choice. They took it in 1898, by sea power, and expeditionary forces—the same old story. They got command of the sea, south of Orleans and Key West and when they had command of the sea they invaded the island, and hopelessly beat the poor Spaniards. The Spanish soldier or sailor was out-classed, not in bravery, but in *matériel*. He was neglected by his Government, that is all; sent to die, "to commit suicide," which was nothing serious to the people who stayed at home. By an expeditionary force the Americans took Cuba, destroyed the Spanish Fleet, and Admiral Dewey defeated Montogo and took Manilla. It is interesting in the history of sea power to note that in the 18th century, 1761-2, the English Navy took both Manilla and Cuba, which were restored to Spain by foolish politicians in 1763. The other branch of the Saxon race now have them again. To use the words of an American writer, "The capture of Cuba and the capture of the Philippines caused a New Pacific and a New Atlantic," and thus I got the title for my lecture.

I would strongly advise gentlemen to read the American Bancroft's "New Pacific," one of the most interesting books I have ever read. It is full of details with regard to commerce, strategic position, and races.

There was not much gain in having the Philippines unless the United States had links joining San Francisco to Asia. Americans looked forward to that, and say so in these books. There is "The American Advance," by Carpenter, which is a most valuable book. They deliberately lay it down that as they have control of a great part of the brains of the world, as they have endless potentialities of wealth-making in the valley of the Mississippi and other places—minerals, corn, cattle, and oil—that there are, on the other side of the Pacific, 4,750 miles away, 600,000,000 people between Cochin China, Burmah, Indo-China—people panting for wealth, and with every desirable commodity for exchange. Mr. Bancroft gives details of the schemes of commerce from the point of view of the United States. Captain Mahan gave them another piece of good advice—to take the

Sandwich Islands, to take Hawaii. Look at the strategic position of Hawaii, he says, half-way between our ports; nothing between it and Asia and Australia but Fiji; consequently Hawaii is a place of the utmost importance. They got it without even paying their usual annexation fee of fifteen million dollars. There was some domestic confusion in Hawaii. The name of the Queen, whom you saw at the Jubilee, was beautiful, and her end was quick. Her name was Liliuokalani. She was abolished soon after the Jubilee, for the United States annexed her island. The next thing they did was to get a naval station and a port between Hawaii and the Philippines, in the Ladrones, at Guam. I see some naval gentlemen here, and I would much prefer that they should continue the discussion in this connection, and state the exact potentialities of the United States as between those large territories and the Monroe doctrine, which is an elastic doctrine preventing Europeans getting power in South America, or controlling the vast wealth of Brazil, Peru, etc. Consider the potentialities of linking San Francisco by Hawaii, and the Philippines on to Japan. One of the books to which I have referred says that the United States must immediately champion the Chinese, because the Chinese are the reservoir of the mechanical and labour power of humanity. I have testimonies here in abundance to the strategic future of China. If you take the lecture delivered at Aldershot lately by Colonel Browne, the Military Attaché during the late war, and take the book by Captain Barnes describing the Wei-Hai-Wei Chinese Regiment, and read the writings of Gordon, you will see that from every conceivable point of view there is much more in the Chinaman than is generally supposed, and the Americans hope to control them.

Now we come to another progress towards the Pacific, which is a British progress, and on British territory. The French did not succeed in getting eastward anything like as successfully as the Dutch or the Spanish or the British. They had some small possessions. They had tried to get control of India, but they were ousted by Clive. Simultaneously with the endeavours under Dupleix and others in India, they went along up the St. Lawrence and got to Quebec, and founded the fortress. You know all about Wolff and its capture, and the remarkable display of British sea power in 1757-1761. Things marked time until about the close of the Crimean War, when progress began to expand westward from Montreal. Mr. Pitt in 1789 had recognised the future of the Pacific. Anson had explored the Pacific in the time of George II. Mr. Pitt so recognised the importance of Vancouver Island on the Pacific coast of Canada that he absolutely threatened to go to war with Spain unless he was allowed to keep the island in 1789. That was a very provident measure on the part of Mr. Pitt. But Canada was long ignored, and, indeed, during the reaction after the splendid energy of the British race against Napoleon, there was a kind of dead calm, not the spirit of God brooding over the face of our waters, but the spirit of low and base commercialism and the spirit of luxury. But the Canadians were true to their future in spite of their stupid rulers. They soon got beyond the great lakes, and they made the finest system of internal water communication in the world.

They saw that they must link the Atlantic with the Pacific. Nova Scotia projects out into the Atlantic, so much so as to be a distinct advantage to traffic from Liverpool to Quebec, 2,620 miles, as com-

pared with the Liverpool and New York, 3,020. Moreover, in Nova Scotia there is coal, and at the beginning of the reign of Queen Victoria coal became to sea power what victuals are to armies. Lord Roberts was telling me about the small ship he went to India in, a ship of about 600 tons. Some of you gentlemen can contrast that boat with the ships in which you went to South Africa in which you could put a couple of battalions. Transit across the sea by big steamers opened up the coal question to a tremendous extent, and the coal question enters every detail of navigation nowadays. The question is always being asked: Where is coal? There is coal in China, and that is another potentiality of the East; there is coal enough there to last at the present consumption of England 2,000 years. There is coal at Halifax, at one end of the Canadian-Pacific Railway. Unfortunately the arbitration in the State of Maine put Maine astride the line from Montreal to Halifax. This piece of Canadian territory was alienated from Canada by the Ashburton Treaty. The Canadians made another railway around Maine, an inter-Colonial railway. There is plenty of coal and enormous resources of food on that side of the line, and it is all secure, provided you have command of the sea. Now when you get to the great lakes you go into the rolling prairie to the Rocky Mountains, and then you come out at Vancouver, where there is coal again, the Nanaimo coalfield.

I believe the best coal for shipping is the Welsh coal, and therefore England has a tremendous monopoly from that point of view. But there is excellent coal at Vancouver. Another curious thing that I did not know till lately is, that there is smokeless coal in the Rocky Mountains, at Canmore and its vicinity. This fact may affect the future enormously. Consequently, you have a railway which enables you to take your troops right across to the Pacific coast to the Far East, a thousand miles nearer than by any other route, which gives our nation while it has command of the sea a greater power than it had at the time of Napoleon. But you will scarcely believe that the British Government did everything they possibly could—I am not speaking politics, only plain history as to several British Governments, administrators of both parties—to prevent the development of Canada and to give Columbia to the United States. I would not blame the United States for taking it, but certainly I am surprised at our recent statesmen. Mr. Pitt, the best Minister we had, the Minister who, when all the Powers were cringing before Napoleon, stood up to him, having saved his own nation by his courage, and saved Europe by his example, saw the value of Columbia. Providence was impersonated in this case by Sir John MacDonald, who saved our strategic position. In 1870 he saw that Canada must make a tremendous effort if she meant to secure the outlet to the Pacific. "It is quite evident to me," he wrote, "from the advice received from Washington that the United States Government are resolved to do all they can short of war to get possession of the Western territory, and we must take immediate steps to counteract it. One of the first things to be done is to resolve to build a Pacific Railway." Inspired by this great pioneer of Imperial unity Canada was able to do this the following year, 1871, and British Columbia was saved. It is curious, to say the least of it, that this colossal undertaking, whose strategic importance—my main argument is strategic, but you cannot have strategy without food, and railways mean brains

—whose strategic importance was noted in a burst of envious admiration by Li Hung Chang, received little or no encouragement from the mother country. So much the more is Canada's glory the greater. The Trans-Continental Railway, with British Columbia at the end of it, is a monument to the genius of Sir John MacDonald, as it is to the political ability of the people, the Canadians, who put their trust in it. That it is of immense value to the Empire as well as to Canada every year demonstrates more clearly. There is absolutely untold wealth on each side of it. There are 500,000 square miles more arable land on each side of that railway than there are in the United States altogether, and everything else is in proportion to that colossal state of things. Columbia is of immense value. Save for its many fine ports the Union Jack of England waves nowhere along the Pacific Coast from the Horn to the Behring Sea. That is a strategic flaw with regard to our Empire, especially from the side of Panama and Nicaragua. Americans are going to have a canal at the cost of twenty-eight millions of money in eight years by continuing the French scheme probably. If you look at the map you will observe that all the coast of the Pacific has very few indents. The United States are singularly unfortunate in their Pacific Coast—San Diego, San Francisco, Portland, and a few other places are all they possess, whereas the coast of Columbia is absolutely impregnated with harbours. If Columbia had been given to the United States there would have been no port of any kind British between the Falkland Islands and the North Pole. Columbia reaches out towards Asia as Nova Scotia reaches out towards Europe, 430 miles nearer Asia than is San Francisco. In addition, on the return voyage, the current shortens the journey considerably. I believe the journey from Yokohama to Liverpool was performed in twenty-five days once, if not less. Reaching out towards Asia, as Nova Scotia reaches out towards Europe, the distance between Liverpool and the Far East by way of the chief town, Vancouver, is a thousand miles shorter than the route by New York and San Francisco, and, moreover, as I have said, the ocean current which leaves the coast of Asia eastwards to the northern part of the American Continent gives the ships bound for the north-western port a gain of twenty miles every twenty-four hours. But these advantages, great as they are, would be of little value without the supply of good coal, of which British Columbia produces an inexhaustible quantity; elsewhere on the whole of that coast there is very little. I believe, in fact, that San Francisco depends in great part on British coal. Esquimalt, fortified by Canada and England, is a naval base of the utmost importance; in fact is the key to the Imperial supremacy in the North Pacific. Eastwards there is no other coal station nearer than Hong Kong; southward, none nearer than Fiji. In time of war it will serve the British Government to as good purpose as the want of it would paralyse the fleet of an enemy. Opposite stands Vancouver, the terminus of the Canadian-Pacific Railway, by means of which the British can land in Japan in half the time it would take by Suez or the Cape. My principal object is to show the strategical importance of these places, Fiji, Hong Kong, Singapore, and so on. Had Sir John MacDonald and the people of the Dominions been converts of the Manchester School, to which the people of the United Kingdom were devoted in the sixties, Russia would now have a distinct advantage with regard to the Pacific. By what? By the Trans-

Siberian Railway, which, however, is not a more important railway than the Canadian-Pacific. The British Empire would have had no trade route to rival the Trans-Siberian Railway, and would have had no naval base from which to dominate the North Pacific. It would have had no Vladivostok or Port Arthur. These are Canada's contributions to the magnificent sum of our Imperial might.

Now let us see what Britain's Imperial might was able to do one hundred years ago in regard to sea power *versus* land power. You will observe a very striking resemblance indeed between the position of Napoleon after Trafalgar and the position of England then and the position of Russia and Japan at the beginning of the present war. It is perfectly clear that there is a marvellous resemblance topographically and strategically between the Japanese isles now, and their resources and future prospects, and the British Isles from 1804 to 1815. In other words, we stand at the beginning of the 20th century with our allies, the Japanese, bearing the same relation to Eastern Asia as our little islands of the United Kingdom bore to the French power at the beginning of the last century. If you take that point home and study it with the aid of maps you will admit its accuracy. Of the two Powers John Bull is, I think, the stouter, Japan being more elongated; but there is not much difference with regard to the square mileage, ours being 121,000 and Japan's about 160,000. The population now bears the same relative proportion to Russia as the population of Great Britain bore to the population of the French Empire at its height. Here we were on the west of Europe against a great land Power. It was impossible for Napoleon to get to England unless he obtained command of the sea. Owing to the English being armed to the teeth, even if he had got into England, he could not have fared very well. A celebrated strategist says that he is going to make peace in Tokio, and Napoleon, in 1804, said he was going to make peace in London. Well, he rested in peace in St. Helena before it was all over. It was hard indeed for Napoleon to do anything against England, especially at that time, when it could feed its people with the produce of its own island.

The British were wise and resolute. They were determined to hold out *à outrance*. The wars of the French Revolution and Empire lasted from 1793 till 1815, with only a year interval. What were the methods? To break down the sea power of the French and their allies and then to harass the French by expeditions, and to incite European Powers to worry the Emperor by contributing to the support of their armies.

Trafalgar was the consummation of the Empire of the Seas, but two days before October the 21st Napoleon made the Austrian general, Mack, a prisoner at Ulm. He entered Vienna in 1805, Berlin in 1806, and made the Peace of Tilsit in 1807, thus becoming master of the Continent west of the Niemen.

But in 1808 he went to Madrid, and this was the commencement of the end. "The Spanish ulcer," and the British Navy and Army, ruined him. We became allies of the Portuguese and Spanish. We aided, abetted, and utilised their guerilla warfare. Our sea power enabled us to send expeditions from Sicily to the east coast road between Valencia and Barcelona, to Figueras Bay, under Sir A. Wellesley, from Cork, and, between 1808 and 1813, to Cadiz, Lisbon, and Oporto.

When Sir John Moore was cut off by Napoleon from Portugal in 1808 he was able to secure the retreat of his army by the aid of the fleet at Corunna. When Wellington wished to drive Joseph across the Ebro and to cross the Pyrenees into France, he was able to change his base from Lisbon to Santander, on the Biscayan shore, and the Navy flanked his march from Vittoria to Bayonne. Just compare Spain and Italy with Korea, and see how the Shan-Alin Mountains and the Ché-Piang-Shan Mountains and the Yalu resemble, from a strategic point of view, the Alps and the Po, the Pyrenees and the Ebro. See the resemblance of Port Arthur and Gensan to San Sebastian and Tarragona. The further Napoleon or any other invader advanced south of the Pyrenees the more dangerous became his line of communications, and the greater the advantages of sea power. When the Russians crossed the Danube and took Plevna, and got within touch of Constantinople in 1878, their whole invasion collapsed, by reason of the Fleets of Turkey and Great Britain. Manifestly, on the other hand, the British in 1814 would not have had a chance of invading France successfully with 70,000 men unless the main body of the French was occupied on the Seine and Marne against the Allies, and unless Napoleon had wasted his Grand Army in Russia in 1812. So the Japanese may be obliged to be content with a campaign in Korea and Manchuria for as long a period as that waged by the British in the Iborian Peninsula 1808-1813. If Russia be as obstinate as on previous occasions the war may last for twenty-nine years. The British would have fought for thirty years if necessary 100 years ago. The Japanese can make raids—so did the British, but they cannot break the land might of Russia in a hurry, unless it be far inferior to what it was in 1812 or in 1854, if the Russian leaders be equal to Scult or Marmont, not to speak of Napoleon. Korea and Manchuria may illustrate guerilla warfare, and the careers of the Spaniards Empecinado and the Minas may be repeated in the Far East. If Port Arthur be taken, Southern Manchuria may be the theatre of Japanese operations, even as when San Sebastian fell Southern France was the theatre of British operations in 1814; but it is as hard for the Japanese to get to Harbin as it was for Wellington to get to Toulouse. But I must ask you to pursue these and many other interesting problems at home with the aid of any good atlas. My time has been more than exhausted.

I must conclude by thanking the illustrious Chairman and all my audience for such patient attention to such a long, dry, and involved discourse. My excuse for thus detaining you is that it is only by careful study of these and similar Imperial strategic questions that a self-governing community like the British, whose party leaders by no means represent the wisdom or foresight which such an Empire as ours requires, can sow greatness for posterity, or even hold their own in this new century.

APPENDIX A.

THE NEW PACIFIC: LINES OF COMMUNICATION.

A dozen line of steamships, or thereabout, now (in 1900) cross the Pacific between America and Asia, where, for two and a half centuries, a single galleon made its clumsy way forth and back from

Acapulco to Manila once a year. Ships comprising scores of lines ply along shore, unite the islands and mainland, or sail direct for foreign ports. Thus Hawaii and California are linked, Australia with Asia and America and all the larger islands; North America with South America, Africa, and Europe; Japan and China with Southern Asia, the Philippines, Australia, India, and Europe; Alaska and Pacific ports, Mexico and Pacific ports, Central and South America, while the shores, islands, and rivers of Asia swarm with foreign vessels where, half a century ago, a timid commerce found for the most part sealed ports. Sixty years ago vessels trading into the Pacific rounded Cape Horn or Good Hope, and, creeping along the coasts of America or Asia, called at the various points for traffic and made their exchanges, returning after an absence of one or two years. Now all the important ports have their fast-running steam-ships, sailing on stated days, direct to, or connected with, the chief cities of the world. At such places as Vladivostok, Yokohama, Tientsin, Shanghai, and Hong Kong twenty-five or fifty steamers of the Pacific mail, the Canada Pacific, the Northern Pacific, the Oriental and California, the Oriental and Peninsula, the Trans-Siberian, and the Nipon Yusen Kaisha, or Japan Mail Steamship Company, may any day be seen at anchor, or arriving and departing, the last-named company alone, the largest but one in the world, operating hundreds of vessels, including eighty-three steamers, and entering every commercial port of Japan, China, Korea, and Siberia, with lines to Calcutta, the Philippines, Australia, the Hawaiian Islands, and America. Then, besides the swarms of native junks and river steamboats and fleets of sail, are thousands of foreign sailing vessels which likewise cross and recross from every point to every point, or pass along the shore, carrying the surplus products of one land to another to benefit all first appearing within the last half century. Back of this was the time when small craft of forty and sixty tons—seldom larger than three or four hundred tons—sailed this sea on voyages of circumnavigation and discovery, sometimes of piracy or of pure adventure, sometimes of all together, now stealing stealthily along the shore with bloody-handed cut-throat crew, rifling towns and burning ships, or striking out boldly into the unknown with a recklessness unsurpassed by the mariners of any age or nation.

To-day, the iron-bound battle-ship ploughs her majestic course with ponderous implements of destruction so nicely poised as to make the leviathan arbiter of human destinies alike on sea and land; one or more of these modern monsters being served on their way and at their destination by coal ships, supply ships, refrigerator ships, and distilling and repair vessels, so that every comfort and every advantage may be at hand for those who go forth to death or domination. With the application to navigation of electrical, or some yet-to-be-discovered power, the voyage across the Pacific will occupy no more time than is now required in crossing the Atlantic. Thirty years ago Japan's foreign trade was next to nothing; it is now £40,000,000 a year, more than half of which has sprung up within the last decade. An increase of China's trade at that rate would bring the amount to 2,000,000,000 dollars in fifteen years. Aroused from the dead past to life and self-consciousness, Japan is just now filled with a further sense of her capabilities from her success in the late war with her neighbour. Since her emergence from barbaric isolation, she has come

to the front as a maritime Power, meeting America more than half way in trans-Pacific intercourse.

In their steamship service the Japanese have an advantage over their competitors in the small wages paid to seamen and the large subsidies received from their Government. As long as this state of things continues, and until *our* (*i.e.*, United States) Government sees fit to place our commerce on an equality with that of other nations, or until *our* (*i.e.*, United States) merchants or shipowners can devise some means to obviate the difficulty, we must expect to see our products transported across the Pacific to a great extent in foreign bottoms. Should the Chinese ever come forward as a maritime nation, which they are as able to do as were the Japanese, then, indeed, will Asiatic craft swarm upon the sea like bees in a field of flowers.

The Canadian-Pacific Railway has its own steam-ship service from Vancouver to Asia and Australia. The Northern Pacific Railway and the Oregon Railway and Navigation companies both have connections with Asiatic lines from Seattle and Portland. From San Francisco the Occidental and Oriental Steamship Company carry freight and passengers to Honolulu, Yokohama, Hong Kong, Kobe, Nagasaki, and Shanghai, while the California and Oriental Steamship Company from San Diego to Hawaii, China, and Japan facilitates the commerce of the Southern United States with Asia. The Pacific Mail Steamship Company offers service between San Francisco and Manila, and the Polynesian Steamship Company has been organised by New York and Philadelphia capitalists for the establishing of a line to Manila, stopping at Honolulu, the Ladrones, and the Carolines. The spots of ground on which now stand Vancouver, western terminus of the Canadian-Pacific Railway, and port for the Canadian Trans-Pacific steamers, and Vladivostok, Russia's Pacific metropolis, and Trans-Siberian railway terminus, at once the Petersburg, Gibraltar,. and Odessa of the Far East, were, forty years ago, little better than primæval wilderness. From Tacoma the Northern Pacific Steamship Company has good service to Japan and China, one steamer sailing every fortnight. The Oceanic Steamship Company has lines from San Francisco to Honolulu, Somoa, Fiji, Tahiti, New Zealand, and Australia. The Seattle-Honolulu Steamship Company and the British-American line from Seattle to Honolulu and Hilo were organised and put in operation soon after annexation. South America, the South Sea, Australia, and the Far South-East all have ample steam and sail navigation facilities. Further than this, new Trans-Pacific lines are constantly springing up, and new vessels being added to the old lines. (See "New Pacific," Chapter I., by Bancroft.)

APPENDIX B.

British Columbian Coal.

When we cross the Continent to the Pacific Coast, we find, in connection with the coal of British Columbia, a group of facts scarcely less striking than those to which reference has already been made. Along the whole Pacific Coast of South America no coal is found suited

for steaming purposes. There is none along the coast of North America until we come to Puget Sound. At different points on the Sound mines are being worked on American territory, but the coal is all of a distinctly inferior quality. It is only when we cross the boundary line into Canadian territory that in Vancouver Island, the site of Britain's only naval station on the western coast of America, we meet with large deposits of good steaming coal. The superiority of this coal is proved beyond question by the published tables of the War Department of the United States, in which are given the comparative values for steam-raising purposes of the various fuels found on the Pacific Coast. In this statement—certainly not a partial one—the Nanaimo coal is rated far above any found in Washington, Oregon, or California. The annual output of the mines at Nanaimo and Wellington has now risen beyond a million tons.

We may now consider how the coal supplies of the coast are supplemented by those of the interior.

An important coal area has lately been opened up in the Rocky Mountain district. A few miles from Banff, and scarcely a hundred yards from the line of the Canadian-Pacific Railway, a mine of anthracite coal is being worked. Many outcrops of the same deposit are found northward and southward along the line of the Rockies in British Columbia. It represents, I believe, the only true anthracite coal which has yet been found, or, at any rate, worked in America westward of Pennsylvania. It contains a larger amount of fixed carbon than the Pennsylvanian coal, burns rather more rapidly, and gives out greater heat. On account of the peculiar excellence of the coal, the development of this mine has been watched with much interest. The chief difficulty has arisen from the lack of a sufficient market within a reasonable distance. The coal is used exclusively by the Canadian-Pacific Railway in heating its cars as far eastward as Lake Superior. For domestic purposes it is sold as far westward as Winnipeg, taking the place of Pennsylvanian coal brought up the lakes, and westward as far as Vancouver. It would be much more extensively used but for the fact that stoves and furnaces generally throughout the country are adapted to the use of soft, bituminous coal, and the class of people willing to change their appliances and pay a higher price for a superior coal is limited. There has hitherto been little sale for the refuse coal, or slack, which, in the neighbourhood of large manufacturing centres in England or Pennsylvania, adds so much to the profits of the mine-owner. Use is now being found for it in working electrical machinery, and this field is enlarging in the West. At Canmore, only ten miles distant from the anthracite mine, the Rocky Mountain deposits furnish a coal of a different quality. The mines have not long been opened, and their extent has not yet been fully determined, but the coal has been found to be almost smokeless, and has the further quality of coking well. Both these facts are of the utmost interest, as the one suggests the possibility of our ships of war in the Pacific being supplied near at hand with the smokeless coal at present obtained from Wales, while the silver mines now opened up in the Kootenay districts, as well as those on the other side of the national boundary, create a large demand for coke to be used in smelting.

(See "The Great Dominion Studies of Canada," by G. R. Parkin.") Pages 78 and 79.

APPENDIX C.

The following table of distances will be useful for reference:—

	Miles.
Vancouver to Montreal	2,906
Vancouver to New York, *via* Brockville	3,163
Vancouver to Boston, *via* Montreal	3,248
Vancouver to Liverpool, *via* Montreal	5,713
San Francisco to New York	3,266
San Francisco to Boston	3,370
Yokohama, Japan to Liverpool, *via* San Francisco	11,281
Yokohama, Japan to Liverpool, *via* Vancouver ...	10,047
Sydney to Liverpool, *via* Vancouver	12,657
Sydney to Liverpool, *via* San Francisco	13,032
Liverpool to Hong Kong, *via* Vancouver	11,649
Liverpool to Hong Kong, *via* San Francisco... ...	12,883
Vancouver to Yokohama	4,283
Vancouver to Hong Kong	5,936
Vancouver to Calcutta	8,987
Vancouver to London, *via* Suez Canal	15,735
Vancouver to Suva, Fiji	5,215
Vancouver to Honolulu, H.I.	2,410
Vancouver to Sydney, N.S.W.	6,960

In these and similar matters I got much help and most liberal supplies of matter from the agents of the Canadian-Pacific Railway.

APPENDIX D.

Russian Expansion Since the Crimean War.

1858. The Amur, all the left bank of, secured by the Muravieff Treaty with China.
Saghalien Islands, from Japan.
1864. Submission of all the tribes of the Caucasus.
1865. Province of Turkestan in Central Asia established.
1866. Bokhara subdued.
1868. Samarkand taken.
1872. Vladivostok naval station in place of Nicolaiefsk.
1873. Khiva subdued.
1876. Khokand (Ferghana) annexed.
1878. Balkh occupied.
1879. Tekke Turkomans defeated.
1884. Merv annexed.
1885. Aktapa Penjdeh Komaroff's attack on Afghans.
1898. Port Arthur "leased" from China.

APPENDIX E.

Muravieff and the Pacific.

Muravieff, in over a year's residence at Irkutsk, had acquired clearer views of the growing importance of the Pacific Ocean due to the naval activity of England,

Though at such a distance inland, by the decline of the overland trade through Kiakhta, he was able to measure the effects of the opening of China to maritime commerce.

He therefore hastened to fulfil his promise to the Tsar to visit Kamchatka and its port Petropavlovsk, the only possible Russian naval base on the Eastern Ocean. No Governor-General had ever visited the distant peninsula, as the voyage was long, difficult, and supposed to lead to no useful results.

Muravieff thought otherwise; the frequent visits of whalers on the coast had given the place a certain commercial importance, and he foresaw that in the event of war Russia must have a safe port on the Pacific.

Muravieff left Irkutsk on 15th May, 1849, and reached Okhotsk on 25th June, whence he sailed on 4th July, arriving at Petropavlovsk on 25th July, after two months and ten days. He was charmed at the sight of the Bay of Avacha, where Petropavlovsk is situated. This beautiful bay, which is said to surpass in beauty and grandeur the celebrated harbours of Rio Janeiro and Sydney, with its numerous inlets protected on the north, west, and south by high volcanic mountains, with depth of water sufficient to allow vessels to unload on the quays, offered such advantages that Muravieff decided to transfer from Okhotsk the seat of the Russian naval forces on the Pacific. His enthusiasm is shown in his letters, where he declares that among the many ports he had seen in Europe and Russia none were comparable to the Bay of Avacha.—*Vladimir.*

APPENDIX F.

Hawaii and Pacific Strategy.

To have a central position such as this, to wit, Honolulu, and to be alone, having no rival and admitting no alternative throughout an extensive tract, are conditions that at once fix the attention of the strategist. It may be added of the statesmen of commerce likewise. But to this striking combination are to be added the remarkable relations borne by these singularly placed islands to the greater commercial routes traversing this vast expanse known to us as the Pacific, not only, however, to those actually now in use, important as they are, but also to those that must be called into being necessarily by that future to which the Hawaiian incident compels our too unwilling attention. Circumstances, as already remarked, create centres, between which communication necessarily follows; and in the vista of the future all discern, however dimly, a new and great centre that must largely modify existing sea routes, as well as bring new ones into existence. Whether the canal of the Central American Isthmus be eventually Panama or at Nicaragua matters little to the question now in hand, although, in common with most Americans who have thought upon the subject, I believe it will surely be at the latter point. Whichever it might be, the convergence there of so many ships from the Atlantic and the Pacific will constitute a centre of commerce, inter-oceanic, and inferior to few, if to any, in the world; one whose approach to the other centres will be watched jealously

and whose relations to the other centres of the Pacific by the lines joining it to them must be examined carefully. Such study of the commercial routes and of the relations to the Hawaiian Islands, taken together with the other strategic considerations previously set forth, completes the synopsis of facts which determine the value of the group for conferring either commercial or naval power.

("The Interest of America in Sea Power."—Captain A. H. Mahan. Page 43. Written in January, 1893.)

APPENDIX G.

Some of the principal books which I used for this lecture were:—

Reclus.—"Géographie Universelle." A magnificent work, with countless fine illustrations.

Bancroft.—"New Pacific." One of the most interesting and instructive books of recent years, edit. 1900.

Vladimir.—"Russia on the Pacific and the Pacific Railway," and his "Treatise on the Chino-Japanese War of 1894-5."

Colquhoun.—"The Mastery of the Pacific."

Carpenter.—"The American Advance."

Mahan.—"Interest of America in Sea Power."

"*Augescat*" in "United Service Magazine,"

and many other works, but I mention the above as, with the exception of *Reclus*, which is very large and costly, and can be consulted in public libraries, all these should be in every Military Library.

T. M. M.

The CHAIRMAN (Field-Marshal the Right Hon. F. S., Earl Roberts, V.C. K.G., K.P., &c.):—I have listened, as I am sure all present here have listened, with the greatest interest to the lecture which has just been delivered—a most interesting and most instructive lecture. Dr. Miller Maguire has taken us over a vast extent of country, and given us most valuable lessons throughout his lecture. Time will not permit of me alluding to some of the many interesting points he brought forward; but there is one point to which I would especially invite your attention, namely, that it is to the Pacific that the centre of International gravity has now shifted, and that it is mainly in that direction that the dominating factors will be found when any serious future complications arise. In his lecture, Dr. Miller Maguire has very graphically explained to us how some of the causes of this change have been quite phenomenal. If we look first to the Western shores of the Pacific, where our attention is now more immediately directed, we find in Japan perhaps the most wonderful instance of a new national birth which history has ever recorded. Less than forty years—I think it was in 1868—this comparatively small group of islands was scarcely in touch with the outer world, and, strategically speaking, was a negligible quantity. To-day Japan is a nation whose alliance we are proud to possess, and estimates itself powerful enough to enter single-handed into a contest with a European Power which has the strongest Army in the whole of the world, and the bravery of whose soldiers is only equalled by their hardiness. If we take Japan's great adversary, Russia, we find that about the same time (forty years ago) Russia's possessions in the Far East were absolutely undeveloped. Within

the last few years those possessions have been brought into direct communication with St. Petersburg by a railway close upon 6,000 miles in length, and vast sums have been spent in garrisoning and fortifying the harbours which that railway feeds, in order to make use of them as bases for the very considerable fleet which Russia thought proper to place in the Western seas of the Pacific. Other nations have not kept aloof from that region. France has possessed herself of territory known as Indo-China; Great Britain has acquired Hong Kong and Wei-hai-Wei; and Germany Kiau-Chau. Farther south we come to Australia. Less than 100 years ago Australia was considered almost a waterless waste, and used as a convict settlement. Now it has developed into a powerful continent, the colonies of which four years ago nobly came to the aid of the Mother Country in her hour of need. Crossing to the Eastern waters of the Pacific, we meet again precisely the same extraordinary and material progress, which has considerably modified the old strategic conditions, whether as regards Columbia with its potentialities of great wealth, or the mines of Alaska, or in the great United States port of San Francisco. To show to what extreme importance the Pacific has become, I may mention that it is now, as I daresay you all probably know, connected to the Atlantic by no less than nine lines of direct railway communication. I believe that a tenth is under consideration. Valuable and important from strategic points of view as these railways are, they will be surpassed when the canal is made through the Isthmus of Panama. That will be indeed a change in strategic views. If any further proof is required of the great importance of the Pacific, I would call your attention to the fact that in the last two years two submarine cables have been laid from one shore to the other: the all-British one from Vancouver to Australia, and the United States cable from San Francisco to Manila. These two cables, owing to their connection with land telegraphs and other submarine cables, have given the final link to the telegraphic girdle round the whole of the world. That is an important strategical condition of affairs which I think Dr. Miller Maguire has enabled us to appreciate by his very valuable lecture.

ON THE NECESSITY FOR TRAINING SEAMEN FOR THE SEA SERVICE.

By Admiral the Right Hon. Sir J. C. DALRYMPLE HAY, Bart., G.C.B., D.C.L., F.R.S.

Thursday, 14th January, 1904.

Admiral Sir N. BOWDEN-SMITH, K.C.B., in the Chair.

UNTIL the middle of last century no plan for training men for the Navy by the Admiralty existed. The Mercantile Marine was the source from which these men were drawn; apprentices were entered by it in considerable numbers, and, after a year's training in a man-of-war, formed good crews to navigate our ships and fight our guns at sea. The Mercantile Marine, however, not only trains no men for the Navy now, but it does not enter apprentices in any numbers or train enough seamen for its own purposes.

The manning of the Royal Navy until the middle of last century was very badly provided for. When a man-of-war was commissioned it took several months to man her. Her commissioned officers were sent to the various ports to collect a few men: one lieutenant was sent to Tower Hill, another to Liverpool, a third to Newcastle or elsewhere. He had a rendezvous at a public-house, and there he sat under gaudy recruiting bills, which described in favourable colours the character of the captain and the service on which the ship was likely to be employed. At last, after four or five months' delay, the ship sailed for her commission, and in about a year's time the captain and officers succeeded in disciplining the crew. This ship's company, at the end of three years, was again disbanded, and the ship which replaced the one paid off had again to undertake the recruiting and disciplining of another crew.

To the late Admiral Lord FitzHardinge belongs the credit of inducing the country to man our ships fully and to train boys for the Navy. In 1845 he persuaded his colleagues at the Admiralty to obtain authority from the Treasury to train 300 boys. In the following year the Chancellor of the Exchequer struck this expenditure out of the Estimates, and Admiral Berkeley (as he then was) in consequence resigned his post at the Admiralty. He was fortunately a member of the House of Commons, and after explaining to Parliament the cause of his resignation, the Chancellor of the Exchequer was persuaded to continue the grant for training boys for the Navy. Admiral Berkeley rejoinnd the Board of Admiralty and remained in office until 1851.

The difficulties the Navy had to contend with until the training system was established may be confirmed by some cases in my personal experience. In 1835 I was serving in H.M.S. "Trinculo" on the Cape of Good Hope and West Coast of Africa Station. Until that

year smugglers who had been convicted were sentenced to serve in the Navy as a punishment. About nine of our best boatmen were Deal men serving out their sentence. An Act of Parliament very properly ordered that the Navy was no longer to be used as a place for penal service, and ordered their discharge. We were then engaged in the suppression of the slave trade and our boats were constantly employed on the Bonny River, and the other Oil rivers where the slaves were embarked. These men were suddenly ordered to be discharged, and no British seamen being obtainable, we had to complete our crews by enlisting some Kroomen, of whom we already had our due proportion.

Again, in 1836, a Channel Squadron of seven sail of the line was commissioned under Admiral Sir Charles Paget. I was then serving in H.M.S. "Minden," and, like the other ships, we could get no men. The "Minden" was sent to the Shetland Isles and scraped together about 200 fishermen who did not speak, or even understand, English, and who nearly broke the hearts of the officers who tried to keep them in the necessary cleanly habits and discipline of a man-of-war.

At the outbreak of the Russian War I was in command of H.M.S. "Victory," which was the receiving ship at Portsmouth for the men sent down from Tower Hill. They were positively of every class except seamen. It was my business to appropriate them to the ships which were being commissioned. Many I tried to discharge as unfit; but the Admiralty were determined to man the fleet somehow. A wooden-legged sweeper was sent to me; I discharged him; he was sent back; I again discharged him; not only was he sent back again a third time, but Admiral Berkeley came down from London to ask my reasons. I tendered my reasons and he gave me a wigging for delaying the manning of the fleet. The wooden-legged sweeper was sent to the "St. George," and her captain landed him at Dover on his way to the Baltic; he was again sent back to me from Tower Hill, and my friend Commodore Hastings, going in the "Cyclops" to the West Coast of Africa, took him as ship's cook, but landed him as useless at Falmouth. I saw him no more.

Such were the exigencies of manning the Navy before boys were trained for that Service, and such are now the exigencies of the Mercantile Marine, because boys are not trained for it.

The Royal Navy at present employs about 83,000 seamen, who have entered as boys in the training-ships at the ages of from fifteen and a quarter to sixteen and three-quarters, and who then engage to serve until they are thirty years of age, and may then re-engage until they are forty. Of every 100 who complete their first engagement to thirty years of age, 65 re-engage until they are forty, 12 rejoin at some later period, and 23 are lost to the Navy.

To keep this number of (in round numbers) 83,000 men complete, it must be remembered that the reduction of this number is effected by:—1. The discharge of those who have reached the age of forty. 2. Those who have failed to re-enter at thirty years of age. 3. The loss by death and other mischances of the Service. To meet this waste. 4,700 boys are annually entered for the naval training-ships, and about 1,000 in H.M.S. "Northampton" and her tenders. There are now 9,900 boys borne for training, which is completed in about two years and two months, after which, at about 18 years of age, they begin their period of 12 years' service, as stated above.

The number of 83,000 seamen is sufficient for the peace force now in commission; but if war should break out the Naval Reserve is the only trained force on which we can rely for manning the additional ships now completing, without considering the larger number of ships which may soon be built to make our Navy sufficient for its many duties.

The Naval Reserve, a very reliable force, consisted up to 1897 of two classes:—1st class—11,700, serving in the Mercantile Marine; 2nd class—11,300 employed as fishermen and in the coasting trade; 23,000 in all. But it must be remembered that these men being taken from the Merchant Service in time of war, will deprive it of its best men at the very time that our Mercantile Marine would be fully employed in provisioning this country and in distributing its commerce.

R.N.R. Strength, 31st December, 1903.

Qualified seamen	5,170	
Old First Class	6,023	
		11,193
Seamen	6,393	
Old Second Class	3,901	
		10,294
Firemen		4,544
Grand Total		26,031

A further Naval Reserve is being created of those men who, at thirty years of age, after twelve years' service, prefer to join the Reserve to re-engaging for the extra ten years in the Navy. This Reserve is to number 15,000 men, and will apparently require an additional number of entries of boys.

R.N.R. Seamen and Fishermen.

Employed in Merchant vessels	7,000[1]
,, Fishing ,, ...	11,000
,, in Docks, etc.	3,000
	21,000

It seems to be supposed by many persons that, because we live on an island, our population is born with nautical tastes. This does not seem to be so, as was recognised in the Navigation Laws now repealed. The sea service requires, like every other trade and profession, a long apprenticeship, and it is proved to demonstration that after the age of 17 lads are not attracted by its adventurous character. An attempt was made at Portsmouth to train lads of 18, who were called "Novices," for the sea; but they did not turn out satisfactory seamen, or compare in efficiency with those entered and trained as boys.

There is no doubt of the fact of the increase of foreign and corresponding decrease of British seamen employed in the Mercantile Marine.

[1] About 3,000 in foreign-going ships.

In 1888 there were 158,959 British and 24,990 foreign seamen employed in British merchant vessels; in 1901 the numbers were 151,376 and 37,174 respectively—a decrease of 7,583 British, and an increase of 12,184 foreign, seamen in 13 years. In the quinquennial period ending 1901, the census shows a decrease of 4,597 British seamen, and an increase of 5,168 foreigners. In the same census 33,610 lascars are employed. The lascars are British subjects, and are excellent for tropical service. A good proportion are drawn from the Northern Indian races, and are not wanting in courage and endurance, even when serving outside the Tropics.

The Board of Trade Return for 1902 shows (p. 74) a total of 253,540 persons employed afloat in the Home and Foreign Trade. Of these 39,177 are Asiatics and lascars, 39,825 are foreigners, and only 174,538 are British.

We hear a great deal about the unemployed. The best way to deal with the unemployed is to employ them, and here we have a statement that in the most manly, healthy, and active of all employments one-fifth of those employed are foreigners.

No doubt, as suggested in the Report of Sir F. Jeune's Committee, it may be due to the greater attractiveness of shore employments to grown men; but it must also be observed that grown men will not take to the sea.

Again, it is doubtless true that one in thirty-six of our population are employed in the Navy, and Merchant Service, and as fishermen; but the numbers in the Navy and Merchant Service stated above leave 30 per cent. of the total as fishermen.

The apprentices entered for the Mercantile Marine in 1902 are given as 1,342, but not all of these are in training for able seamen At the present time there are 5,419 apprentices on the books, but they are mostly training for officers. In the sailing merchant navy alone under our flag are 22,071 ships, 11,500 of these aggregating 2,237,000 tons, sailing on distant voyages, and which are manned by 35,825 British, and 9,668 foreign seamen; a service providing the best remaining training for sailors, and yet abandoned as a training place for our own men to nearly 10,000 foreigners, who cannot be expected to defend our merchant-ships from an enemy's privateer or to join our own Navy to fight our enemies.

On 6th July, 1900, as reported in the *Times*, Mr. Ritchie, then President of the Board of Trade, said: "That with regard to the employment of British seamen on British ships . . . he deplored the fact that so large a number of seamen on our ships were foreigners, and he would gladly see those replaced by British sailors, but he could not undertake to ask Parliament to legislate so as to compel British shipowners to employ seamen of a certain nationality; the ship-owners must be left to choose without restriction men who were to man their ships."

Thus the Minister admits the evil, but does not accept the responsibility of providing the remedy, which is the employment of the seamen of the British Empire in its own ships. The ship-owner has, however, no choice; there are no trained seamen for him to choose from; the Naval Reserve men—23,000—are all engaged; and the ship-owner no doubt, as a sensible man, would prefer well-trained and well-disciplined British seamen to those of any other nationality.

The cost in pay of the 84,000 men serving in the Royal Navy is, including all charges but victualling, £3,215,000, or an average per head of about £44 a year.

If we turn to page 40 of the Board of Trade Returns, June 19th, 1900, we find that the average pay of merchant seamen is about the same.

The remedy for the evils indicated above, in the large employment of foreign seamen to the detriment of our own fellow subjects, would seem to be to adopt for our merchant navy the same training of our boys which has redeemed our Royal Navy from evil habits too often distinguishing the seaman, and has now made them men of character and conduct of whom the nation is justly proud.

We have seen above that an entry of 4,700 boys annually is sufficient to keep up the number of 84,000 seamen for the Royal Navy. It is obvious that a further entry of 9,500 boys would supply the 175,000 men required for the Mercantile Marine, unless the waste in the Mercantile Marine is much greater than in the Royal Navy.

It seems to me that the State must step in and do for the Merchant Navy what the State has already done for the Royal Navy. Is it too much to hope that the Admiralty and the Board of Trade could arrange for such an increase of training, and make the men of the merchant navy all subjects of the King, and a real reserve for the Navy in case of war? The cost of manning our Merchant Navy with respectable British subjects, by educating our boys, now running to swell the host of unemployed, in a healthy, active and useful profession, and adding incalculably to our naval force, would certainly not cost more per head than the boys we train for the Navy. The 40,000 foreigners whom our Mercantile Marine now trains would have to leave it on the outbreak of war, as subjects of belligerent or neutral States, and there are no British seamen to take their places.

I may be told that it is not the business of the Admiralty to train boys for the Mercantile Marine, and that it is not the business of the Board of Trade to educate boys for the sea service. The Lord President of the Council is, however, at the head of the Board of Education; the President of the Board of Trade and the First Lord of the Admiralty are his colleagues; it surely would be possible for them to combine so as to consider the best mode of training our boys, or some of them, to man the Mercantile Marine with British subjects, provide a real reserve for the Navy, and so get rid of the disgrace of having foreigners to man our Merchant Navy.

The training of boys for the Mercantile Marine was recommended so long ago as 1859 by the Royal Commission over which the Earl of Hardwick presided, and of which Mr. W. Shaw Lindsay was a member who had moved for it in the House of Commons, but their recommendations have never been carried out. Let me explain in detail how it seems to me that this Commission's Report could be carried out with great advantage now.

There are, as we have seen, 40,000 foreigners and about 175,000 seamen to be recruited as time goes on by men of the same quality as our naval seamen. If it takes an annual entry of 4,700 boys to keep up the 80,000 men for the Navy, an annual entry of 10,000 boys would supply the 215,000 men required for the merchant navy. Instead of having 10,000 boys in training for the Navy as at present, 30,000 boys would be under training for both Services. The Commission recommended training-ships along our coast—not crowded, but

with about 200 boys in each. This would require 100 small training-ships, say ten in Ireland, at Londonderry, Belfast, Kingstown, Waterford, Youghal Cork, Bantry, Limerick, Galway, Killybeg; ten in Scotland, at Leith, Dundee, Aberdeen, Cromarty, Stornoway, Oban, The Clyde, Loch Ryan, Kirkwall, and Lerwick; and 80 in England and Wales. I will not indicate the ports, but the ships should be assigned not only to the sea-board fringe, but also to the great cities. Thus the Birmingham training-ships could be at Bristol, the Manchester training-ships in the Mersey, and those from the Nottingham and Yorkshire towns in the Humber.

Boys sent to them should be volunteers, physically fit, and having passed the sixth standard, having the full consent of parents and guardians, and their terms of admission and enlistment should be identical with those in force with the entry of boys in the Navy. They would thus become a real Naval Reserve, and we should have a Merchant Navy in good order and discipline instead of a disgrace to our country and flag, in many cases now too well known to require description.

May I hope that these suggestions may be worthy of consideration, and that we may soon see a larger number of boys who have volunteered for the sea afforded the opportunity of being trained to take the place of foreigners, who now take the bread out of the mouths of forty thousand of our fellow subjects.

Commander W. F. Caborne, C.B., R.N.R. : — In taking part in the discussion of the very important subject brought before us by Admiral Sir John Dalrymple Hay—whom we are all so pleased to see here this afternoon as lecturer—I do not intend to deal with statistics, for it is an incontrovertible fact that while the whole *personnel* of our Mercantile Marine is becoming larger year by year, its European British-born element is becoming smaller, the foreign section at the same time constantly expanding. Against the increase in the number of lascars—seafarers with the merits of whom I am personally well acquainted—I can have nothing to say, for, as a rule, they are very good men, and most of them, like ourselves, are born subjects of the King, and may in the future be advantageously utilised in the scheme of Imperial Defence. Indeed, looking at what is going on at the opposite side of the world, it seems to me that if the Government of the Australian Commonwealth, instead of trying to exclude East Indian seamen from their ports, would heavily tax British ships arriving on their coasts largely manned by aliens, they would be engaged in a far more patriotic work. All those who have paid attention to the question of the defence of these Islands, will, I am sure, share the opinion that it is of the utmost importance that our merchant-seamen—and in that generic term I include masters, mates, engineers, sailors, firemen, mechanics, and other ratings of a similar character—should be British-born subjects, not only to furnish a recruiting area for our Naval Reserves, but also for the purpose of carrying on our indispensable food supply and our trade in raw materials and manufactured goods in time of war. In fact, in the public interest it seems to be quite as essential that the *personnel* of our Mercantile Marine should be genuinely British, as it does that the *matériel* should belong to the same nationality. Although the Navigation Laws were repealed in 1849, a certain amount of protection was preserved for ship owners, and, according to law, the owners of British

merchant-ships must be British subjects; yet, in an age of limited liability companies, this wise provision is frequently eluded. If it is desirable that the ships should be British—and the legislature appears to hold that view—then, as I have already said, it is equally desirable that the masters and crews of those vessels should be British also. In short, while all possible protection and encouragement should be given to our ship-owners, all possible protection and encouragement should also be extended to British seamen. All this indicates and emphasises the necessity for training seamen for the sea service, and also for providing for their subsequent employment. Successive British Governments, with one exception (and then only in a very modified form), have evaded what would seem to be a plain duty in this respect, with the result that we have arrived at the present unhappy state of affairs. Of course, in advocating the employment of British-born crews, one is liable to be met with the stock arguments, that the shipowner has as much right to employ foreign seamen as an inn-keeper has to employ foreign waiters; that this is a Free Trade country, wherein no restrictions upon industries can be imposed; and that the foreigners engaged on board our ships are mostly Scandinavians, who would not be likely to assist any other nation in hostile acts against Great Britain. The answers to these arguments are simple. If the authorities do not interfere with the employment of foreign waiters—and these men hardly come into the question of national defence—they do interfere with the general conduct of the liquor trade, in the interests of health and morality, in much the same way that they also interfere with the management of theatres for the protection of life; and if, by becoming shipowners, men engage in what is really a business of vast national importance, they must consent to conduct that business with due regard to national interests. Although this is a so-called Free Trade country, at present there can be no Free Trade permitted in our national defences, and the private interests of individuals must ever be subordinated to the general welfare of the State. Again, the Scandinavians employed are in a minority, instead of being in a majority, as is so very frequently erroneously stated, and, lastly, we have some recollection of a Scandinavian brigade having fought against us during the recent war in South Africa. We shall probably be told that, however much shipowners might wish to employ British seamen, there are not enough of them to go round. That, no doubt, is the case; but a well thought-out and efficient training scheme, practically administered, combined with a workable plan for the after employment of boys and young seamen, would eventually set the matter right. We shall be reminded that there is a depression in the shipping trade, and that the carrying of boys would be an additional tax upon the already over-burdened shipowners. Well, depression in sea carriage may be caused in a natural way by a shrinkage in the volume of trade to be dealt with, or it may be caused by too keen competition; in the present instance, I think it is largely due to the over-production of new tonnage, and to owners selling their older boats to foreigners, who then run them, in an exceedingly cheap manner, and without the same restrictions as to deep-loading, in rivalry to their former proprietors. Of course, the tonnage expressly built for or by foreigners, as well as the shipping bounties paid by some countries for the encouragement of their Mercantile Marine, must be taken into account when considering this problem; and I will leave it to you to judge for yourselves how far these periodically recurring depressions might be averted. I do not propose going into the various causes that have led to such an

influx of foreigners into our Merchant Navy, for time will not permit; but I may remark that the statement of Sir Francis Jeune's Committee, that the falling off of British-born subjects in the Mercantile Marine is largely due to the greater attractiveness of shore employments, must not be taken too literally. Naturally, one modern aspect of the case must not be overlooked when dealing with this part of the question, and that is the spread of education. Years ago, when many boys went to sea completely, or almost completely, devoid of the rudimentary elements of education, most of them were well content to remain in a ship's forecastle until such time as they became incapacitated by age or infirmity. But since the establishment of free education all this has been changed, and numbers of the foremast hands of to-day very properly seek some form of advancement, either afloat or ashore; and this is an important factor which must be taken into consideration in connection with all schemes having for their object the providing of a sufficient supply of British-born able seamen and stokers. There is no lack of boys offering themselves for service in the Royal Navy—I believe that only one out of about eight applicants, including those who from some cause are ineligible, is accepted—for they know that once they are enrolled in that great service, their future, subject to good conduct on their own part, is assured, and they do not dread what may be termed the legitimate hardships of the sea. On the other hand, coming to the merchant navy, it may be that boys, who otherwise would enter the Mercantile Marine—with its many comparative disadvantages at the best of times—when opportunities are afforded them for doing so, are sometimes frightened away, not by the legitimate hardships and perils of the sea, but rather by the illegitimate hardships and dangers. It is true that of late years the crew accommodation has improved, the food is better, and the cooking is more frequently done by men with greater pretensions to knowledge, than was the case when cooks were constantly selected more out of deference to their bodily infirmities than to their culinary skill. Nevertheless, the progress made has not been so rapid as could have been wished, in order to keep the comforts at sea *relatively* advanced with the greatly improved comforts of home; while the drawback of youngsters being herded with representatives—and not always desirable ones—of all nationalities, has not been without its effect. Then there is the question of so-called "desertions" in some foreign ports, a matter which was touched upon by Commander Dawson on the occasion of my lecture here last June, and in this connection it is interesting to note the remarks of the United States Commissioner of Navigation, in his recently issued report, on the shipping frequenting San Francisco. He says:—"Desertions from British ships from Europe amount to 43 per cent. of the crews. British masters and owners, under ordinary conditions, profit by such desertions, as in some cases from Australia." Certain of our own consular reports are equally outspoken. The more frequent payment of wages, the compulsory granting of allotment notes, the handing over of deserters' wages to the Board of Trade, and some energetic diplomatic pressure brought to bear upon the Federal Government of the United States with a view to putting down crimping, and other rascalities, with a strong hand, would do much in the way of reducing the euphemistically termed "desertions." It may be thought that I am digressing from the subject of the training of seamen, but I would submit that all my remarks are really relevant, for it is obvious that it is absolutely useless to expend time and money on the training of boys, unless the conditions of their after service are

such as to induce them to remain at sea, at least for a period. In short, my view is, that any training scheme adopted should be backed up by another one specially devised to ameliorate the conditions of life and service afloat. It must not be forgotten that on board our mail steamers and best vessels, where the conditions are generally favourable, the crews are principally British, the foreigners flourishing most in the ocean tramps and long-voyage sailing-ships, and forming an insignificant minority in our coasting trade and fisheries, where, once more, undeniable advantages are to be found. Now what is the attitude of our shipowners towards the manning question? The best of them would, no doubt, like to see some improvement effected, but many are indifferent, and many others are even hostile. For instance, Sir Francis Jeune's Committee, while making a recommendation with regard to the easy and cheap naturalisation of foreign seamen—a proposition which I strongly commented upon, and vigorously protested against, last June, and have also referred to at a more recent date in this Institution—threw a small sop in another direction, by suggesting that the superintendents of Mercantile Marine offices should be empowered to refuse to permit foreigners to sign the articles of agreement of British vessels—with which, by the way, they alone have to deal—if, in their opinion, such men had not a sufficient knowledge of the English language to enable them to comprehend necessary orders that might be given them. This would seem to be most reasonable and proper. But what is the result? Why, many of the shipowners are up in arms at the infringement of what they are pleased to call their just right to employ any persons whom they may select. Before sitting down, I should like to remark that we have had two small sea-going training schemes at work during the past few years — one being a Government scheme in connection with the Light Dues, and the other one being in connection with the Shipping Federation—but much cannot be said for the success of either. The good work done by the training-ships and other establishments already situated round our coasts, and the difficulties with which their managers have to contend, I must leave others to speak about, as my time is now up; but, in conclusion, I would remark that in the same way that, owing to persistent advocacy, a feeling seems to be gradually stealing over the country that some form of universal service is desirable if we are to continue to hold up our head among the nations, so, by great and continued persistence on our part, we may eventually convince all classes of our fellow-subjects, and particularly those placed in authority, that it is indispensable to the defence and welfare of the Empire that the *personnel* and the *matériel* of our merchant navy should be British alike in name and in fact.

Captain J. D. CURTIS, R.N. :—I very much regret that Admiral Boys is not here this afternoon, because he would be able to tell us something about the manning of ships. He was a lieutenant of the "Impregnable" in 1838, and the ship lay at Spithead for twelve months before she was manned. I happened to be in the "Queen," and she took about six months to get manned in 1842. I should like to say a few words with regard to the manning of the merchant service. I was talking to a young fellow, who is now employed by the Thames Conservancy, who had been an officer in the merchant service. I said to him, "How did you get on?" He replied, "I was on a 4,000-ton ship, and we only had a crew of thirty men, nine of whom were apprentices. Of course, they were no good when we first went to sea; they were sick." I asked him, "How did you shorten

sail?" He said, "We let go the upper top-sails; we kept the main tack lashed down; put the helm up, and let her rip, or blow out of the bolt ropes, if necessary." I think it is very wrong that a 4,000-ton ship should be allowed to go to sea with only thirty men on board. This young fellow also told me that the donkey engine counted for four men. Sir John Hay said in his lecture that the pay in the merchant service and in the Navy was about the same. I do not think that is so. The yearly pay may be the same, but the men of the Navy have a very good pension to look forward to if they behave themselves well. They are always paid every week, which is quite a different condition of affairs to when we went to sea. With regard to what I have said, as to a 4,000-ton ship going to sea with a crew of thirty men, you will find it means one man to every 133⅓ tons. Sixty or seventy years ago, or more, I believe there was a law, before the Navigation Laws were repealed, that there should be two men and a boy to every 100 tons. What I would suggest is that there should be two classes of training-ships, one for cadets, gentlemen's sons, or middle-class people, who would pay, say £30 a year to be taught navigation. The other class would be for boys who would be paid for out of the rates or trade,[1] or some tonnage due might be imposed. Supposing a penny a ton was imposed upon every class of goods, that would go a long way towards paying for them. I should very much like a return to be made of the number of apprentices that have gone to sea, and have afterwards given it up in disgust; I think you will find there are a great many who have done so.

Commander Hon. HENRY N. SHORE, R.N., Retired:—The subject brought to our notice by the distinguished lecturer is unquestionably one of the most important that can engage the attention of a people dependent on the sea transport service for almost everything that supports existence besides affording a means of livelihood for the industrial classes. The problem of finding a remedy for the evils complained of, however, has taxed the intelligence of some of the ablest politicians and men of business, and would seem almost impossible of solution under our existing institutions. The difficulties are greatly enhanced, moreover, by the apparent inability of the people of the United Kingdom to realise that they are islanders; that by the sea they live and move and have their being; and that legislation, which may suit a country forming part of a great continent, is not necessarily adapted to the exigencies of a kingdom which draws practically the whole of its supplies—foot stuffs and raw materials, from beyond the seas. The curious incapacity of Britons to realise their geographical position, and the responsibilties attaching to it, is reflected in the Legislature, which, incredible as the fact might be deemed by strangers to the land, comprises amongst its 600 odd members almost every class of the populace, as well as representatives of almost every industry, except that particular one on which the very existence of

[1] See *Daily Telegraph*, January 14th, 1904. Export and Import trade for 1903:—Export, £542,900,000; import, £290,900,000; duty, ½d. per pound, will give £1,787,083. Would be sufficient to train 35,621 boys at £50 per annum per head. However laudable for charitable people to pay, I maintain it is the duty of the State to do it. They are proud of their Mercantile Marine, so merchants and ship-owners should do it. In the end the public would pay and be none the worse, but all the better.—J.D.C.

the nation depends, the sea transport service. Occasionally, a naval officer strays into Parliament; but of the great sea transport service, never a member is returned to Westminster by the electors of these islands. It would seem, indeed, as if, in spite of our boasted educational system, we had made but little advance in wisdom since Pepys compiled his diary, some 240 odd years ago:—"March 23rd, 1663. To the Trinity House, and there dined very well; and good discourse among the old men. Among other things, they observed, that there are but two seamen in the Parliament; which is a strange thing in an island." Strange, indeed! But what can be expected, while, according to the author of "Efficiency and Empire,"—"we choose the majority of our rulers, not because they are organisers, administrators, or men of affairs, but either because they can talk, or because they are related to propertied politicians, who formerly talked copiously." Too true also, alas! is the following:—"That the artist in words still holds the field as against the man who knows, and can think and do, we have only to look at Parliament." Until all this is changed, how can we expect anything but one-eyed legislation—a sort of meddling, and muddling by philanthropic, ignorant landsmen, who seem to imagine that our Mercantile Marine has the field to itself, without competitors? What, for example, is to be thought of legislation which makes it an offence for a British ship-owner to load his ship beyond a certain draught, or to send it to sea without a specified number of crew; while vessels under foreign flags are allowed to overload in our ports to any extent, give false tonnage registrations, and then proceed to sea with as few men on board as their owners think fit? Is it surprising that the "intelligent" foreigner laughs in our faces? If Government thinks it desirable to hang necklaces of legislative mill-stones round the necks of ship-owners, it ought to protect them from the competition of foreigners who are hampered with none of the obstructions which handicap British vessels. It seems strange, at the time when other nations are fostering their ocean trade by offering inducements to merchants to embark capital in it, that our Government, alone in the world, should cling to a system of irritating interference; while endeavouring to soothe the ship-owner by babbling to him of the blessings of free trade. Perhaps the root of the evils complained of must be sought in the educational systems of the kingdom. These have been framed by landsmen for landsmen. The sea calling meets with no recognition at their hands, and even landsmen complain that the education is best adapted for the production of clerks and young "lydies." But surely it is as important to man our merchant-ships as to man our office stools? Some time ago, Mr. George Barnes, Secretary A.S. Engineers, was reported in the *Times*, as saying that "there was no disguising the fact that elementary education had been a failure from the view of the social and industrial reformer. Before the era of the School Board, a young man was thrown upon himself, and was led to reflect. The outcome of the School Board system was, that the young man no longer thought for himself, but became an easy prey to the cheap newspaper." Has it been of advantage to the shipowner? The general complaint is, that the Board School system creates a distaste for manual labour, an aversion to the sea service. "When the sailor becomes a respectable, God-fearing member of society," says Mr. Frank T. Bullen, the great sea-writer, "the first thing he does is to try and get work ashore." One hundred and twenty years ago, a distinguished philanthropist wrote, "It is so much our proper province to carry on traffic by which other nations are enriched as well as ourselves, that, if this is impeded, we may with propriety say

our occupation's gone. . . . If by a judicious application of skill and industry we can establish nurseries in time of peace, rendering our country more maritimised, and giving our fellow subjects more honourable impressions of a sea life than is vulgarly entertained, it will be an acquisition of importance to us. We ought to diffuse a naval turn through every class of people, and by this means increase our numbers ready to try their fortune on the great deep. The sea may thus become more familiar, and a sea life be more universally approved."[1] As islanders, it should be our first care to provide men for the sea transport service; for, if this traffic is impeded, "we may with propriety say our occupation's gone." Great Britain is not the only country which has experienced difficulty in attracting men to the sea service. Spain, formerly a great maritime Power, once found herself in this predicament; and the means she adopted may be commended to the attention of our legislators. Briefly, King Ferdinand, in 1748, issued certain instructions relating to the government of "The Marine of My Kingdom, to secure its important encouragement, etc.," containing the following remarkable passages:—"As it is convenient for the preservation and increase of the Navy that boys should apply themselves to sea affairs, who, in time, may become useful, the Ministers shall take care that the patrons of vessels shall breed and maintain in them such orphans who are destitute of education, obliging the patrons to employ them in navigation, fishing, and the care of barks, providing them with victuals, and proper clothing, etc., and the justices of the towns shall deliver to the marine commissaries the boys who, under the aforesaid circumstances, they ought to take up, and apply them to the sea service. Of these same orphan boys, there shall be a number employed in the trading vessels of Europe and America, obliging the patrons to take care of them, and on reaching a proper age, they shall be passed to that of matriculated sailors. And the said orphan boys shall not only apply to navigation, but shall also be aggregated to the master carpenters, and calkers, etc. The Ministers shall practise the same in the fabrics of sailcloth, rigging, pitch and tar, avoiding by this means the ruin of such children, who, for want of a determined application and instruction, are lost, etc." Are there no orphan boys in the British Islands, who, "for want of a determined application and instruction, are lost"? And would it not be well for the State to take these lads in hand, and train them for the sea, "avoiding by this means the ruin of such children"? At the present time our cities are prolific breeding-grounds for loafers and hooligans. And the people love to have it so! To sum up: our national system of education should be framed with a view to the full recognition of our geographical position, and with the object of impressing on the rising generation that they belong to a nation of islanders, and that by the sea they live and move and have their being. Young and old, members of Parliament and magistrates, parsons and politicians, all require to be taught that the welfare of this kingdom depends on the efficient conduct of the sea transport service. It is of far more importance to the industrial classes that our ships should be manned, rather than the office stools. In fact, in default of a well-manned transport service, the occupants of the office stools would soon be driven to confess that their "occupation's gone!" Finally, the inhabitants of the United Kingdom must remember that unless the ocean transport service is preserved from falling into the hands of aliens, who would use it to their own advantage, and to our detriment,

[1] "Proposal for County Naval Free Schools."—Jonas Hanway, 1783.

we shall all of us be forced to admit ere long that "our occupation's gone."

Commander C. W. CRUTCHLEY, R.N.R. (Secretary of the Navy League) :—I would beg to thank you, Sir, in the first place, for another service rendered to the country by bringing this great subject forward. I almost despaired of anything more being done in the matter. I will confine my remarks to the two points mentioned in the paper: "that the Minister admits the evil but does not accept the responsibility of providing a remedy"; and, further, that "the State must step in and do for the Merchant Navy what the State has already done for the Royal Navy." Let me, in the first place, say that I think your suggestion that the boys should go from the sixth standard to be trained is an absolutely right one. I have long been an advocate for what could be called a "country-service class" in all the board schools, comprised of boys of good character and physique who intend to serve in the Navy, Army, or Mercantile Marine. I will not detain you more than a few minutes by stating the share that I have had quite recently in this matter. When Mr. Clark Hall's celebrated return came out in the year 1897, it opened the eyes of, I think, everyone to the fact that there was a dangerous increase in the number of foreign seamen in the Mercantile Marine. I think even the Board of Trade rubbed their eyes on that occasion, and thought something of it. The Navy League picked up the matter, and a committee was formed to go into the question. It was a committee of eminent business men, such as lawyers, educational authorities, and naval officers; at all events the proposals that this committee brought forward were common-sensed and eminently workable. We had long communications with the late Sir Courtenay Boyle, who was then Secretary of the Board of Trade, and eventually we organised a large deputation to Mr. Ritchie, then President of the Board of Trade, who, with Mr. Goschen, received us. Before this deputation, however, the Government had practically admitted the necessity for doing something by the remission of a proportion of light dues to those shipowners who would carry boys. Mr. Goschen's remark was that that was just a little sweetening of the pill to the nation that had to pay the Bill to get it through the House of Commons. Sir John Hay said in his paper that the Minister admitted the evil. Mr. Ritchie said: "The Government for their part have not the smallest apprehension with regard to the Naval Reserve, or to men serving in H.M. ships. They believed that the sources from which they derive their supply are sufficient for the purpose, and sufficient for all the responsibilities which are likely to fall on us in case, unfortunately, we are driven into war." The adverse reception given to that deputation put back the hands of the clock a long way. Almost immediately after this, however, in May, 1901, we called together a conference, at which representatives of some twenty or thirty County Councils and shipowners were present, and they unanimously passed a resolution that the time had come when an organised effort should be made to introduce a system of training boys for the Royal Naval Reserve, and consequently the Mercantile Marine, upon the lines recommended by the reports of the Royal Commission of 1858, and already successfully adopted in the case of the Royal Navy. Furthermore, these County Councils were willing to grant scholarships for boys, tenable in training-ships, out of the technical education money provided them; the sole thing wanted to carry the scheme through was the consent and goodwill of the Admiralty and the Board of Trade—little more than that was required. Mr. Ritchie, at the time that he and Mr. Goschen received the deputation, said the

sources of supply were ample, and yet in the year 1902 two Commissions were appointed to enquire into this matter: one, the Naval Reserves Committee at the Admiralty, and the other the Committee at the Board of Trade. The Navy League, I may say, tendered evidence before both those committees, and the Naval Reserves Committee of the Admiralty practically went some way towards carrying out our scheme, because they recommended what was practically a short service system. They said the Navy League proposals were interesting, or something of that sort; but at all events, they did go somewhat in the direction indicated, by suggesting that short service should be recognised in the Navy—presumably that the men having done their short service in the Navy might pass into the Mercantile Marine. I have nothing to say against that if it can be worked, except that to my view it begins wrongly. But they also reported in favour of the Admiralty encouraging any well-considered scheme of training-ships or homes for boys which might be established for the advantage of the Mercantile Marine. They reported that it was practically not possible, certainly not feasible, to create an adequate reserve by establishing training ships for boys which would be greatly to the benefit of the Mercantile Marine and the boys themselves, but would entail a pecuniary cost on the country which would be out of all proportion to the results obtained as *regards national defence alone*. I call special attention to these words, because so far as I can understand—my understanding may be limited—I think our Mercantile Marine is the greatest industry we have; in fact the existence of the country as a first-class nation depends upon the maintenance of the Mercantile Marine. If other trades have a right to be supported out of the taxpayers' money, I do maintain most emphatically that the Mercantile Marine has a right to its share of the money. I now come to the thing that has perhaps grieved me more than anything during late years, and that is the Report of the Board of Trade Committee. I cannot say that I expected the Admiralty Naval Reserves Committee to do much for the Mercantile Marine, although I knew they were sympathetic; but coming to the Board of Trade, I did think that, with a Committee appointed as it was, with men there who knew what they were doing, who knew the gravity of the evil, and recognised that the time had come when it was necessary to stop it, that effective recommendations would be made. I can find in the Report of that Committee nothing—absolutely nothing. The Committee was formed "to enquire into the causes which have led to the employment of a large and increasing proportion of foreigners and lascars in the British merchant service, and the effect of such employment upon the reserves of seamen of British nationality available for naval purposes in time of peace or war, and to make such recommendations with respect to these matters as they may think fit." The principal result of this very unsatisfactory Committee, so far as I can see, was a recommendation as to the employment of cooks, a lessening of the power of the master, and a recommendation that facilities should be given to foreign seamen to become British subjects. That is the outcome, Sir, of that Commission that we hoped so much from. To come down to the bedrock, the Board of Trade shirks the enormous responsibility that would attach to it, if it were partly responsible for the training of boys for the Mercantile Marine: that is the entire bottom of the business. Apart from that, the Board of Trade is so anxious to keep in with shipowners, and to avoid getting on their backs, as it were, that they hesitate to take action for the good of the country for fear of offending the shipowners. I call your attention to the fact that the prosperity of this country was mainly built up when the Navigation Laws were in full force. The Navigation

Laws were repealed at the instigation of shipowners, who clamoured for Free Trade, to manage their own business, and to have all restrictions removed. It may be within the memory of many people here present that there was a gentleman named Plimsoll, who lived some few years since, and we know what Mr. Plimsoll did for the Mercantile Marine, and what the shipowners of his day did when they were left to work their own sweet will. I can speak of that from actual experience, and I know there was no assertion that Mr. Plimsoll made that was not absolutely true. I say this because I wish to lead up to the point that, in a business such as the Mercantile Marine, it is necessarily a thing that *must be* interfered with by the State; it is too important to be left alone to drift in the way it is drifting at the present day, and most large industries are subject to State interference. Then there is another point. It is said to be necessary for Imperial unity that we should get the colonial forces side by side with our own in war time. Well, if it is necessary to do that in war time, if we are to call for their assistance then, why should not we, in peace time, send as the connecting link with our kinsmen over sea the best men that we have in our country as our merchant seamen, in place of sending the rakings and scrapings of the street. My contention is that it is possible for a seaman's life to be made a business life that any man can adopt. Are we to send these alien men, as we do now, as the representatives of the sea power in this country—culled from the rakings and scrapings of Continental towns? I say it is a crying shame to the nation. But as showing what may be done in a small way to remedy the evil, even by a little Society, I would like to mention the Liverpool Sea Training Home for boys. I do not altogether approve of it, and I will tell you why; because I have said that what we want is to send the best men to sea, and not the worst; and the Liverpool Home, good as it is (and I can assure you that there is no establishment, even under the Government, that is better fitted out and better carried on than this particular place; I cannot speak too highly of it), takes the poorest class of boys, and I maintain it is not necessary to go to the poorest class of boys in the streets to find sailors.[1] Years ago, on more than one occasion, I put two or three lines in the *Daily Mail* to say that I could place boys at sea. What was the result? You could not get near my office; there was a string of boys fifty yards long, such was the eagerness to find employment at sea. I do not know that I need detain you any further; I think I have pretty well said what I mean. I am afraid I have not made myself more popular than I was in some quarters, but I cannot help that. I maintain that the missing link in the chain that could bind the Empire together is lost to-day in the dirt and squalor and polyglot jargon to be found in the forecastles of our merchant vessels.

Lieutenant H. T. A. Bosanquet, R.N. (Secretary of the Marine Society):—Admiral Sir John Hay in his paper has so clearly shown you the state of things that existed in the Royal Navy before the introduction of the training-ship system, and the excellent results that have come about since the system was started, that I am sure you must be more or less convinced of the necessity that exists for establishing a similar training service for the Mercantile Marine. We must not, however, overlook the

[1] My contention is that it should be possible for a boy to go to sea in the merchant service without being under obligation to any charitable society. It should be his right, granted by a nation risen and existing by its sea power.—C.W.C.

fact that the happy results in the Navy are not solely due to the training system, but to the improved conditions of life and prospects in that service, which have made it so popular that it is now manned by the pick of the population. Any training scheme for the merchant service must therefore go hand in hand with some plan for improving the conditions of life at sea, or it will assuredly fail. As to the proposed training scheme, I am quite convinced of its necessity, and if in my remarks I put before you some difficulties which are bound to be met with, and must be overcome before any such plan can be a success, I am doing so merely with a view to helping towards the desired end. In the first place, when you have decided to establish your training-ships, and have found the necessary funds to do so, you must be more or less certain as to the number of recruits you will get to fill your ships, and have some plan for disposing of them after training. It is the greatest mistake to draw any conclusions on either of these points from naval statistics. The Navy is exceedingly popular, and the merchant service is not—that is, in comparison—and if you have a certain number of recruits for the Royal Navy, of whom a large proportion are rejected, it does not follow that all, or any of these, will be at once prepared to join the merchant service. However, I do not think there will be so much difficulty in getting recruits for your ships, as there are always numbers of boys anxious for a sea life of any kind, so I will not dwell on this point, but I do think you will find very great difficulty in disposing of your boys after training. Here, again, you must not compare conditions with the Royal Navy. In the Navy the managers of the training-ships are also the managers of the ships for which the boys are intended. As soon as a boy's time is up on board the training-ship there is sure to be a vacancy for him somewhere in the fleet, and he is immediately sent to fill it. In fact, vacancies occur by thirty or forty at a time. No difficulty, therefore, exists in the Navy in disposing of the boys. In the merchant service, however, it is a very different story; the fleet is made up of ships belonging to a thousand different owners and companies, some owning twenty ships, and some one only, and all of them having their own private interests to pursue, and not the good of the State. Many of these take British boys, and are favourable to training-ship boys; on the other hand, a great many take no British boys at all, and a number of shipowners look unfavourably on boys from training-ships. I have here a list of forty large shipping companies; twenty-one of these take no British boys at all, and only nineteen accept them. Again, the taking of boys for any individual ship depends upon the chief officer or master, and not necessarily the marine superintendent of the company. We must consider, therefore, that each ship in the merchant service must be dealt with separately—one chief officer may favour training-ship boys, another will not, and I must say that my experience at the present time is that training-ship boys are not over popular. There are two reasons for this; the first is that the majority of the mercantile training-ships are for boys of bad or doubtful character, and as all those ships, when their boys are sent to sea, endeavour to conceal their reformatory character, because the boys are presumably reformed, ship masters frequently find themselves saddled with thorough bad lots, whom they are only too ready to be rid of at the first opportunity, and one experience makes them cautious of accepting any more boys from any other training-ship. The second reason is that the managers of the good character training-ships expect their boys to get good wages, their contention being that, after a boy has been turned

from a rough bumpkin into an intelligent, smart, disciplined lad, he is worth higher wages than the raw article who has never seen a ship or boat. However, some shipping companies do not agree with this, and I know a particular company who refuse to have anything to do with one of the training-ships because they ask twenty shillings per month wages for their boys, and it is possible to get untrained boys for fifteen shillings. I have endeavoured to show you a very great difficulty which you will have to contend with after you establish your training-ships, unless any scheme of the kind has the hearty co-operation of the majority of the shipping companies. These must insist on their officers giving preference to training-ship boys. I see no reason at all why this should not be done. If the Government take the matter up they could induce the shipowners to assist. The reduction of the light dues for R.N.R. boys carried has been a partial success, and were a further reduction allowed for training-ship boys borne there would be no difficulty in getting these boys taken. I should mention the fact that the Shipping Federation, a body comprising some of our largest shipping companies, has a scheme of its own for getting boys, and this will be found to enter into serious competition with any training-ship scheme. How far their system is a success I do not know, as they keep their failures dark, but one of their number at a recent public meeting said it was a great success; so they will probably not lightly abandon it. There is one more point to which I would like to draw your attention. That is the fact that the decrease of British seamen in the Mercantile Marine is not so much due to the falling-off in the numbers of recruits for the service, as to the wastage that goes on of boys and ordinary seamen who throw up the service, disgusted with it, after a voyage or two. You may send your boy to sea, but you cannot keep him there. Boys are more or less in demand, but when the boy becomes an A.B. he feels foreign competition, and finds difficulty in getting employment, and throws up the service for the shore. I consider the crux of the whole thing is the want of continuity of employment. A man engages for a voyage only, and at the end of that voyage has to begin again and find a fresh berth. If he is ill he has to look out for himself, and is thrown entirely on his own resources. In the Navy, a man, well or ill, knows that he is all right for a certain number of years, and has the prospect of a pension at the end of his time. The merchant service will never be popular like the Navy until it is managed on nearly the same lines, or until it becomes more of a State and less of a private business. I will not take up your time much longer, but I would suggest that Admiral Sir John Hay's proposal be put on trial as soon as possible. There are now only three ships for training boys of good character and physique. None of these are full, through lack of funds. For the sake of experiment, the Government should allow these ships to fill up, and bear all the extra expenses. If the present ships can do this, and show that they are able to obtain and dispose of their boys satisfactorily, let further training-ships be established by degrees as they appear to be required. I am perfectly confident the "Warspite" could be filled at once, and I daresay the "Arethusa" officers present would say the same of their ship.

Lieut.-Colonel T. H. Baylis, K.C., V.D. (late 18th Middlesex V.R.C.): — I should like to be allowed to take part in this discussion. It is a subject of the deepest interest to all of us, but unfortunately men and boys put things off until the time of trial arises. The most important matter in the present day is to be prepared for

emergencies. You cannot improvise a soldier, nor can you improvise a sailor; he must be a man who has had good training and discipline. I think you will admit with me that war has become a science, and the more scientific and intelligent men you have in the Service the better it will be for it. It is not so much the quantity of men you require as the quality of the men for active service, whether for the Navy, the Army, or the Militia. Sir John Hay has, by his paper, proved to the utmost the necessity for the training of seamen for the sea service, but, independently of his paper, the high authority of the admiral is sufficient in itself to make his opinions most worthy, and we are much indebted to him for bringing the matter before us, which, from his rank and long experience and enthusiasm on the subject, cannot fail to be of the greatest benefit. The remarks made by Commander Caborne also proved, not only the necessity, but the increasing necessity for the training of seamen for sea service. Are we ready? We ought to do in peace what is too often left for war. There is no time in war; it is too short, sharp, and decisive. Therefore, let us have those who are efficient. How is that to be done? We have had some admirable suggestions from the lecturer, and also from other gentlemen who have spoken. When I came here I took up a little book which I found on the seats, and found it contained some very pretty illustrations of the training-ship "Warspite"; it also embraced some photographs of the boys and the masters, and showed them performing various exercises. I daresay many of you have been on board that ship. I am a very old subscriber to the institution, and I think it is delightful to see the way those boys are trained, whether for their own good, or for the good of the country. For it certainly does good. Training and discipline are essential to a boy. I have been not only on board the "Warspite," but also on board the "Arethusa" and the "Chichester." If this book could be very widely circulated, so that more subscribers are obtained for these training-ships, it will be a benefit to training-ships generally. With regard to what one of the speakers has said, it occurs to me that the boys of England and Ireland have a natural love for the sea. I have a love for the sea, and I regret, even to this day, that I did not go to sea. I think we should encourage that feeling in every possible way. I think in Board Schools there should be pictures of ships on the walls, so that the boys will be encouraged by looking at them. The great thing is to get the boys when they are young. It was said in the *Times* only to-day or yesterday that if you do not get a boy to become a farmer when he is young he will not become a farmer afterwards; he will take to some other employment. That is my only fear with regard to the training-ships, that after you have trained a boy for the Mercantile Marine, he may go in for some other employment; but by making the Service attractive and encouraging the boys, by giving them prizes, an immense amount might be done. Personally, I should like to see the School Board give prizes to boys who take an interest in seamanship. There is one word more I wish to say with regard to foreign ships. Our own ships are obliged to obey curious legislative requirements, from which foreign ships are exempt when they come here. It is unfair competition, and it acts hardly on our shipping. That is a very great difficulty. I am very earnest in what I have said; I have been a judge at the Admiralty Court, so I know something about shipping.

Commander G. O. Moore (Superintendent of the training-ship "Arethusa"): — My excuse for taking part in this

discussion is that I was for seven years Instructor of the London Brigade of Naval Artillery Volunteers, and have been for fifteen years the superintendent of a voluntary training-ship. Some points occur to me in regard to this paper. The first one that strikes me is the difficulty which would be experienced in getting ships for the purpose. At the present moment the "Formidable," at Bristol, and the "Exmouth," at Grays, both want new ships. The "Formidable" proposes to build a shore establishment at a cost of £30,000, and the Metropolitan Asylums Board intend to build a substitute for the "Exmouth" at a cost of £52,000. The second point I wish to refer to is, Where are we to put the ships? The smaller ports round the kingdom could not take a ship drawing twenty feet of water. The port authority, as we found with regard to the "Chichester," thinks a great deal more about a chalk-tip than they do about a training-ship. The "Warspite" was removed from Woolwich a short time ago on account of Woolwich being considered insanitary. It was first proposed to put her at Grays, in Essex, but the "Exmouth" authorities objected to that. Then it was proposed to put her in the lower part of Greenhithe bight; that the "Worcester" objected to, and in consequence she was dumped down on top of the "Arethusa." I do not wish to say anything against the "Warspite," but it is unpleasant to have an institution which spends half as much again doing the same work as you do constantly compared with you, even in small matters; my boys tell me that the "Warspite" boys get plums in their pudding on Sunday, and jam with their tea every day. There will be considerable difficulty in finding places for the ships. Then I want to know where you are going to find the boys. The "Arethusa" for the last twenty years has been short of boys. When she was started she was intended to carry 300 boys, and for the last twenty years she has only once touched 200, and that was only accomplished by advertising in every paper in the kingdom, and sending circulars round to every authority that could be thought of. We do not confine ourselves to the very lowest class. I asked the Council of the Institution to be kind enough to allow the card I hold in my hands to be distributed, and the ladies and gentlemen present can read that there is a provision that where the parents are well-to-do they can pay for their boys, and that is taken advantage of in a great many cases. But of late we cannot get the boys. It is not the want of money with us. We could scrape the money together, I believe, for 300 boys if we could get them, but we cannot get them. When the "Chichester" was first started with a flourish of trumpets by Lord Shaftesbury, he had the boys at the Old Refuge in Great Queen Street, Lincoln's Inn Fields, in numbers; but that very soon went off. When you come to inquire about the boys' antecedents, and see whether they really mean business, you will find the numbers dwindle down very low indeed. The next point I wish to refer to is the disposal of the boys. At the present moment the London market is glutted with boys. The "Warspite" ships at Cardiff; we ship at Newport, Monmouth, because we cannot get rid of them in London. It is just the same in Scotland: the "Mars" at Dundee, send their boys right down to Cardiff to get rid of them. The Welsh ports seem to be the only ports where we can get rid of the boys in anything like a stream. With regard to the boys coming to us. There is one thing I omitted to say on that point. We are not unpopular, and I will give you three incidents to prove it, that have occurred in the fourteen days of this year. The first two boys that were sent to the ship this year had had brothers in the ship; one went to the

Navy and the other into the merchant service, and they are at sea at the present time. I had a boy visit me last Sunday who had been one voyage to the Cape in a Union-Castle steamer. He stayed for a few days on board, which we frequently allow them to do, because it does the other boys good. His three brothers had previously been trained in the ship, and all of them—if there is anyone here from the Shipping Federation present I hope they will make a note of it — all of them have been quartermasters in the P. & O., and one is commanding a launch in the Docks for the P. & O. Company. The third case that I wish to draw attention to, in order to show that we are not unpopular, is that a man who was in the ship about twenty-five years ago brought us his son to train. That boy is in the Navy now, and we now have another son entrusted to us by this man to bring up in the steps of his brother. I mentioned when I first rose that I was seven years Instructor of the Naval Artillery Volunteers in London. They were disestablished by a Committee before which I was not called to give evidence; neither was my predecessor, who is now the chief inspector of life-boats under the National Life-Boat Institution. A Commission afterwards sat which recommended the formation of a Naval Volunteer Reserve. Both my predecessor (the inspector of life-boats) and myself were called to give evidence before that Commission, and we gave evidence strongly in favour of volunteers. What do you want? You want an intelligent man who will not be sea-sick, who knows one end of a gun from another, and who is handy in a boat: my experience of naval volunteers is that you can get as many of them as you like, if you give due attention to their business calls, and give them ample opportunity of embarking in a man-of-war to get used to the routine. You will have men upon whom you can put your hand at any moment, because they will be thrown out of their regular business in time of war, and would be only too glad to serve. In conclusion, I would say: Support the voluntary training-ships that are now in existence, and the Naval Volunteer Reserve.

Mr. H. D. Capper (Chief Gunner, R.N.):—I rise with a certain amount of diffidence to address this meeting, fully conscious of being the very first officer from the lower deck of the Royal Navy who has ever had the honour to address such a distinguished audience, or to offer any remarks on behalf of the class to which I have the honour to belong. I did not hear the early part of the discussion, and some of the notes I have made may perhaps travel over ground that has already been covered by previous speakers. It struck me, first of all, that there always must be a great difficulty in providing an adequate Naval Reserve, from the fact that we must have Naval Reserve men who are trained to the habits of the sea; and it has been proved by the lecturer that we have, in the existing Naval Reserve, exhausted all the men who, in the Mercantile Marine, have any desire to associate themselves with the defensive forces of their country. I presume that, in the event of war, slow steamers and sailing vessels will be laid up in the nearest port, and a number of British subjects who are manning them, who may not at present be members of the Royal Naval Reserve, would, from patriotic motives, join the Navy; but they would be scattered all over the world, and it is probable that very few would be where the Admiralty desired them to be. I think it is a truism to say that "grown men will not join the Navy," as the lecturer very aptly put it. Some speakers who addressed the meeting have emphasised the point that after you have trained them to the sea there is a difficulty in keeping them there. It

has also been clearly proved by the lecturer that the system of training boys which is in existence in the Royal Navy has raised the standard of morals and character of the seamen on the lower deck, and has also adequately met the difficulty which he, in the early part of his lecture made clear to us, of obtaining the men to man the ships. If that is so with reference to the Royal Navy, then I agree with one of the speakers that it is our duty, if we can, to urge upon the Government to copy this arrangement for the purpose of the Mercantile Marine. There is one other point which arises, and which has caused me to claim the honour of addressing you. I do not know if I quite understood the lecturer to mean that it is the lads who, to use a sailor's term, "sway away," and eventually join the unskilled unemployed that he would look to to fill the training-ships he proposed. I should like to say with reference to that, that certainly in the Royal Navy it is not such lads who join the training-ships. I speak from experience (being an old training-ship instructor and an officer of the Training Service) when I say that the majority of the boys we get in the Royal Naval training-ships are of a type above that. They are the sons of artisans, yeomen, and small shop-keepers, and there is no difficulty at all in obtaining such lads. The only difficulty is one that I shall advert to later on with reference to their age. To prove that point, if one hundred boys from one of our training-ships who had served six months, and who would therefore be a little over sixteen years of age, were paraded side by side with one hundred second-class stokers just recruited, who would be some two to four years senior to them in age, it would be seen at a glance that the physique of the boys of the training-ship, their general appearance and characteristics, would set them in a higher plane to the men that were recruited at a later age for the services connected with the stoke-hold. Twenty years ago I was an instructing officer in one of the West Country training-ships, and it used to be my duty to march the boys out to their training field. On one occasion I was in command of from 250 to 300 boys; and in our passage along the streets we passed about four companies of the Rifle Regiment going in an opposite direction; I well remember comparing notes with a colleague of mine, who was with me, upon the superior appearance and swing of our boys, who were four, or perhaps five, years junior in age to the Army men. It is not my business to disparage other services; I only want to make it clear that the lads we get in the training-ships are not those who afterwards swell the ranks of the unskilled unemployed. It may be said that, supposing the proposals of the lecturer were adopted, there would be a difficulty in obtaining boys, and that statement has been put forward in another form by the Secretary of the "Warspite." There is no difficulty in getting boys for the Navy. I can assure you that we now get applications from certainly two boys for every one we want, and that the advantages connected with the Service are so favourable to the men of the lower deck that there is never any difficulty in obtaining the number and class of boys we want. I and some of my colleagues desire to associate ourselves with the suggestion that boys should be regularly trained for the Mercantile Marine, but would amend the gallant lecturer's proposal by expanding our Royal Naval Training Establishments to accomplish this. We think it is the grandest suggestion that has ever been put forward, not only for the purpose of manning the Mercantile Marine, but at the same time to provide an adequate Naval Reserve in case of war. The suggestion I would put before you is that supposing extra ships were set up under the Admiralty, and three times the number of boys were trained, that periodical examinations should take place,

and the cream of the boys should be kept for the Navy. Then surely some arrangement could be made with the larger and more responsible shipping companies so that the remainder of the lads could be passed over to them under an engagement similar to that of those who are retained in the Service, with an annual retaining fee and annual gunnery training for the Royal Naval Reserve. You should also always hold before them the reward that at certain periods they may be able to pass an examination and join the Service to reap all the great advantages which now accrue to those who enter into the Royal Navy through the lower deck. Coming back once more, and finally, to the remarks made about the numbers of boys who could be obtained by recruiting, I may say that the great advantages that are now open to the boys on the lower deck of H.M. ships, and the concessions that have recently been given, have so largely augmented the number of boys who are desirous of serving that the Admiralty have been enabled to raise the standard of age and girth of the chest so as to keep down the number of recruits. I would also like to say finally that it is the opinion of those with whom I have consulted on the subject—men of my own class—that, for the Mercantile Marine first, secondly for the Navy, and lastly, and altogether, for the country, the suggestions put forward by the gallant lecturer are those which, in our opinion, should be adopted.

Mr. T. Holman (Chief Gunner, R.N.) :—In following my colleague, I would like to say how very interesting and instructive I found the early remarks of the lecturer, the historical sketch that he put before us. Personal experience of that kind, enabling us to compare the past with the present, brings us very close indeed to the subject. The main object of the lecture, as I understand it, is to get a reliable Naval Reserve. I think there will always be one abiding weakness in our Naval Reserve in a country of this kind, namely that as we want our Naval Reserve men to be men of the sea, to keep their sea stomachs and sea legs and the habits of the sea, it is necessary that they should go to sea; and if they go to sea, then, in time of war, we must take them from the sea and from our own ships, so that it seems to me that our Naval Reserve can never quite be ideal. I have for many years past thought over the best way of raising an efficient and sufficient Naval Reserve, and I would endeavour to do so in this way: I would first of all organise the counties into recruiting districts, under capable lecturers. I quite agree with the gallant lecturer, that we should catch the boys very young, when we can fire their imagination and arouse their adventurous spirits. Yet we cannot take them all down to the coast and show them the ships of the Navy; but if it is not possible to take the nation to the Navy, yet I think it is possible to take the Navy to the nation. It has been made possible by animated pictures, and that sort of thing. If we had capable lecturers, and sent them throughout the country with animated pictures, we should have no end of boys coming along. Having got the boys and taken them into ships or large training establishments, such as has been mentioned, I think we should not send them straight from there into the Mercantile Marine. I think we might go to the Treasury for money, and ask the Admiralty to considerably extend the machinery of training. I think all the boys we get in that way should have a naval training first under a short service system, or there might be so many allowed to take the training in the long service way, according to their inclinations and the necessities of the country, but the others should be trained on the short service system. I think that would be more popular for other reasons. I

think it would be better, while the boys were young and their bodies were pliable and their minds fresh, to give them their individual training, rather than to send them into the loathsome forecastle of our present merchant-ships to first acquire bad habits and wrong-headed ideas of conduct, and then afterwards to try and break them into naval discipline, and to yoke them to naval work. All that we put through a short service system would, on finishing their period of service with the flag, probably find themselves joining the ranks of the unskilled unemployed ashore; but although they would be unskilled landsmen, yet they would be skilled seamen and workers on the sea, and I think you would find that when they got hungry, or when those around them wanted food and could not obtain it, they would turn to the sea. The merchant service can no longer train men for the Navy, but the Navy can nowadays train for the merchant service. I think the kind of men that such institutions would be able to send to the Mercantile Marine would be such as to induce the merchants themselves to offer them very much better wages, what we might call a living wage, and better conditions of life generally in the forecastle. That is the way in which I think we might build up a Royal Naval Reserve, and in that way turn the foreigners out of our forecastles, and man British ships with British seamen.

Admiral Sir J. C. Dalrymple Hay, in reply, said:—I have to thank those gentlemen who have kindly criticised my paper. I do not think I ought to detain the meeting, because I believe there have been no special objections taken to it, nor have any particular questions been asked for the purpose of eliciting a reply. With regard to obtaining boys, my own recollections of the matter when the thing was first begun was this, that I, as Captain of the "Victory," had a correspondence with the landowners and clergy of the six nearest counties to Portsmouth, and that I had on an average about twenty-seven applications a week for boys to complete the vacancies in three hundred boys; but I found that such a large number of persons applied, that with every boy who came to the "Victory" (this was in 1853, just before the Crimean War) I made them all bring £2 (two pounds), which was placed in the paymaster's charge, and which was returned when they went to sea, if they behaved themselves, otherwise it was forfeited. They also brought two suits of duck clothes, necessary underclothing, and two suits of serge. These boys came from a tolerably good class in society, and there was no difficulty in providing these boys. But I found out some time back, when the old theory that all men were equal, was brought to the fore, that it was quite wrong to take boys from the classes, who could provide that amount or money and clothes, and, therefore, that was done away with; but I understood from my successor that when that process was stopped, they obtained rather an inferior class of boys, but they made just as good seamen; they were licked into shape while they were boys, and made the best seamen that you could possibly have. Therefore, I daresay that I was wrong, and that those who succeeded me were right, and that it made a more general field from which to draw the lads to be trained for the Navy. I tender my humble apologies for having done wrong at the beginning, and I admit now that the change was a right one. Probably, the field would not have been so large if it had been restricted in the manner in which I restricted it. I have now, only to thank the meeting for the kind manner in which they have received my paper, and I suppose it is not a very bad one, because it has not been very severely criticised.

The CHAIRMAN (Admiral Sir N. Bowden-Smith, K.C.B.) :—In bringing this discussion to a conclusion, I think you will all agree with me that the subject which has been brought before us by the Right Hon. Baronet is one of the greatest importance to the nation, and I venture to hope that the paper which we have heard to-day, and the discussion which has ensued, may lead to the question being more carefully considered, and acted upon than it has been in the past. Of course, the question of expense comes in. You cannot train ten thousand boys without incurring a very large outlay; but the cost ought not to deter the Government from taking some action. I doubt the wisdom, however, of training ten thousand boys. We have recently, as you know, determined to spend £10,000,000, on the pacification of Ireland by settling the land question; but the question of our Mercantile Marine is just as important, and if we can afford to make a great outlay there I think the country might face the expense and the responsibility of training up a Mercantile Marine. Some rather disparaging remarks have been made as to the action of the Board of Trade, and other departments. I can only say, as regards the Admiralty, they are always ready to assist the Marine Society. I have been, for over twenty years on the Committee of the Marine Society, and we work most harmoniously with the Admiralty; in fact, when boys go to Spring Gardens to volunteer for the Navy, and it is found they are not tall enough or of sufficient girth for their age, they are sent down to us; we take them in hand for a few months, and feed them well, until they become sufficiently big to join the Navy. I am very glad that the gallant lecturer and those who have spoken do not propose to interfere with the 35,000 lascars on board our merchant-ships. As has been pointed out by the lecturer, they are excellent men. After a period of service extending over fifty years, and having frequently travelled in mail steamers, I can say that they are well conducted, sober, industrious men, and well-fitted to work in the stokeholds in the tropics; besides, as Sir John Hay has pointed out, they are British subjects, and even if we wished to replace them by white seamen we could not do so. With regard to the 40,000 foreign seamen, it does seem a monstrous pity that such a large number of foreign seamen should be serving in our Mercantile Marine when we have at the same time thousands of unemployed in the British Islands. One of the difficulties of the situation has been pointed out by some of those who have taken part in the discussion, namely, that when you have trained the boys, you cannot get them afloat in our Mercantile Marine, unless there is some compulsion—unless the ships are compelled to take a certain number of apprentices or boys. We find this difficulty at the present moment. As the secretary of the Marine Society pointed out, our trouble is to get the boys afloat after we have trained them. The training-ships that are around the coast at the present moment cannot get their boys to sea when they have been trained without great difficulty. I am not speaking of such ships as the "Exmouth," which are supported out of the rates, by the Metropolitan Asylums Board, or reformatory-ships like the "Cornwall," as none of the boys from these vessels engage to adopt a seafaring life. If we trained eight or ten thousand more boys as proposed, we should find a still greater difficulty in getting them to sea, unless there was some compulsion enforced, and what should ship-owners say to that? Competition is keen, and freights are low, and ship-owners will say that unless they are given a free hand in selecting their crews they cannot make a profit, and then what will become of the trade? So that it does not seem to me to be an easy question by any means. I venture to

suggest, therefore, a slight modification of the scheme proposed by the lecturer, for another difficulty is, after you have got the boys on board a merchant-ship to keep them there. They may take one or two voyages, and then they give it up. I would suggest that the State should give a bonus to a man after he had served a certain time in the Mercantile Marine, say ten years, with a good character, on condition that he joined the Naval Reserve, and with an annual retaining fee, remain in the Reserve till he was forty-five years of age. We know that the Admiralty at the present moment are trying to increase our Reserve, especially of stokers. I believe they are inviting men from gas factories, and such like industries, to engage as reserve stokers. I would not interfere with that arrangement, but I would give the men, who had been at sea for ten years, and who have borne a good character, a preference over other men, and in that way our Naval Reserve might be considerably increased. I would like to emphasise what has been said by Mr. Bosanquet, and Commander Moore, viz., that the training-ships round our coast at present are not full, and that there has been a difficulty in obtaining suitable boys. At the present moment there appears to be rush of boys for the sea, and the Admiralty have quite recently increased the chest measurement required for entrance by 1¼ inches, which shows that they can get more boys than they want, and boys are offering also for the Marine Society's ship, the "Warspite"; but we cannot take more at present, for want of means. We could accommodate 300 boys there, instead of 200 now on board, without increasing our staff or ship expenses, and I believe the "Arethusa" could do the same. Therefore, under present conditions, I earnestly deprecate increasing the number of training-ships or training establishments, until those at present in existence are full. I am sure you will all concur with me in according a hearty vote of thanks to Sir John Hay for his excellent paper, for which the Institution is much indebted to him.

FROM IRKÛTSK TO HARBIN.

By Colonel C. E. de la POER BERESFORD, p.s.c., late Military Attaché, H.M. Embassy, St. Petersburg.

IRKÛTSK, the capital of East Siberia, stands on the right bank of the Angarà, which flows out of Lake Baikal into the Yeneséi, close to the town of that name, a thousand miles further down stream. The waters of the Angarà are only clear of ice in July and August, and always cold. Irkûtsk has no debt, no pavements, no drains. *Per contrâ*, it is in some places lit with the electric light, and has churches, hospitals, and police in plenty. It numbers more robbers than any town of its size. The month before my arrival was distinguished by two hundred and forty murders. When we arrived at the station, I, having got my things together, wished to return for a moment to the guard, and asked my wife to remain in the *isvostschick* till I came back. But the police officer, kindly placed at my disposition by the Governor, said: "*You* have your pistol, of course, but if you go back, Madame must go also, or remain in the waiting-room, for if these people," pointing to the shaggy, unkempt crowd surging around, through which I had forced my way not too politely, "wished to rob Madame—and they probably would wish to—they would not hesitate to murder her!" The shops in the main street are not bad, the confectioners and bakers turning out bread and cakes that would be considered excellent in London. Some fine furs are procurable, though not in summer, for they have all been sent to the fair at Nishni-Novgorod. You can also buy real Chinese tea at about ten or fifteen shillings a pound—a little dear, but it came on a camel's back across the Gobi. And what tea it is! Clear like a topaze in colour, aromatic in taste, it in no way resembles the black, indigestible fluid which does duty for the same in England.

We were received with the greatest hospitality by the Finnish Governor of the town and his amiable wife, under whose patronage flourish many charitable institutions. Of these, we visited the Foundling Hospital, and the schools for the convicts' children. The population of Siberia is divided into two classes—the emigrants and the convicts. The former are excellent people, but comparatively few in number. The latter are called by the Russians *varnaks*, from the initial letters of four words (the vowels being interposed for euphony): *Vor*, a thief; *Razboinik*, a robber; *Nakazanie*, the punishment; *Knootom*, of the knout. The word tersely indicates their value in the social scale. But their children, if not left to their parents, often turn out well; and certainly the little people we saw in Madame M.'s institution—clean, tidy, and respectful, doing their work intelligently and well—gave promise of good for the future. On the way to the Museum we were overtaken by a dust storm. It was still freezing, although the date was April 30th. The morning had been sunny and

almost mild. At 3 p.m. a fierce east wind arose; the sun was darkened, as by the November fog in London. Clouds of dust flew up high above the roofs of the houses. The temperature fell suddenly 10 degrees. The streets were deserted. After about an hour the simoon passed away, a shower of snow fell, and in the evening the sun shone out again, pale and colourless, yet brightly, before setting.

Irkûtsk is the home of many millionaires, but their residences from the outside do not give one a high idea of the taste or refinement of their owners. These may go to Paris for three months and spend perhaps £10,000 a head there; bringing back gaudy and expensive articles of *virtù*, not always in the best taste, which contrast curiously with the bare rooms, huge white stoves, and tawdry Moscow furniture. More interesting than the dwellings of the local Crœsus are the Museum and the Opera. In the former is a splendid collection of fossils. Gigantic mastodons, splendid horns of the mammoth and elk, specimens of the extraordinary deep-water fish *dracunculus Baikalia*, that bursts when relieved from the intense pressure of the water, are here. A local sponge given to me by the Curator, which I sent to Jermyn Street Geological Museum, proved a novelty. Every sort of article used for religious worship by the Buriât and Mongol Lhamas, including their prayer-wheels, find place in this interesting collection. The Opera House, built of brick, is excellent for acoustics, and very comfortable. The audience was as much interested in my uniform as the play. *Carmen*, and the *Pikovàya Dàma*, a pretty Russian opera almost unknown in England, were given on the two nights when we attended. The performance, considering that we were 2,800 miles from St. Petersburg, was very creditable. After the opera we supped at the Governor's, and the conversation turned on the state of the town, which, he said, he considered on the whole satisfactory. "But," said my wife, "we are told it is unsafe to walk out at night without a pistol." "Ah, well," was the answer, "of course, no one would be mad enough to do that here." In spite of all drawbacks, Irkûtsk is an improving town; some thousand new buildings of brick have appeared since the completion of the railway. Cereals have cheapened, and the conditions of life are less difficult. It will be necessary to vastly increase the accommodation of the railway station, which is at this moment crowded with men and munitions of war on their way Eastwards. One notices the advance of civilisation more here, where cities arise as if in a night, than in the European provinces of the Empire. Russia is like a giant awakening from a long sleep in the forest. At first he cannot see the wood for the trees. But gradually he will feel his power. The Russian peasant is industrious, superstitious, and most kind. But he is by no means sober.

Surely when Puck said he would put a girdle round the earth in forty minutes he must have entrusted his commission to Mr. Witte and Prince Hilkoff! The Tcheliàbinsk-Omsk section of the Siberian Railway was opened to traffic in 1894, but only since November 1st, 1898, has one been able to travel the whole distance from Moscow to Irkûtsk, 5,106 versts, or 2,900 English miles. In 1898 there were 860,662 travellers by the line; in 1899, 919,782, and in 1900, 966,551. In the last-mentioned year the first-class passengers numbered 5,738; the second-class, 53,937; third-class, 351,684; and fourth-class, 249,766; plus 305,426 immigrants. The latter travel in the trucks which, as all

over the Continent, are built to carry forty men or eight horses. These are fitted with stoves, but when the outside temperature falls, as is not infrequent, to thirty or forty degrees below zero (Fahrenheit) —*i.e.*, sixty or seventy degrees of frost—the sufferings of these poor creatures, wrapped up though they may be in sheepskins, are terrible. They develop all sorts of skin diseases, their ablutions, at all times rare, save for their vapour bath, becoming more seldom than ever. It must be remembered that in 1900 the war with China much retarded the development of civilian passenger traffic on this line. The Siberian reservists had also been called to the colours, which lessened the number of fourth-class passengers. The greater number of the travellers by the line is composed of workpeople and immigrants, all of whom are agricultural labourers.

The numbers of soldiers who were transported have been very considerable. In 1898 the figures stood at 86,663. In 1899 they rose to 130,598, and in 1900 to 211,976. I note that in the fourteen weeks which intervened between the declaration of war in 1900 and the closing of the steamboat navigation by ice on Lake Baikal and the Shilka and Amûr, 52,000 soldiers, 11,000 horses, and many thousand tons of stores were moved by the railway. This comes to an average of 3,715 a week, or 530 per twenty-four hours. This is not by any means bad work for a line which was at the first very ill-laid, and which, if one was to believe the remarks of the English press (often singularly ill-informed as to Russian affairs), was bound to break down under any extraordinary strain. The receipts for the line amounted, for passenger service, to 2,033,633 roubles in 1898, 2,414,746 roubles in 1899, and to 315,231 roubles in 1900. As to goods, the line carried 410,421 poods in 1898, 804,286 poods in 1899, and 1,665,588 poods in 1900. A rouble may be calculated for convenience as two shillings, while the Russian pood is equivalent to 36 English pounds (avoirdupois). By the express trains were carried butter, fish, fruit, game, etc. In 1900 the butter trade had increased 64 per cent. on that of the previous year, in spite of the war in Manchûria. For the last few years this trade has taken an enormous development. The centre of the industry is Kûrgân, in the Akmolinsk Government, not far east of the Urals. Here the grasses are excellent, the cattle fine, and the byres, all things considered, good. The dairy work is superintended by English or Swedish overseers. The only fault is in the packing. The Russian peasant has not yet learnt that cleanliness is next to godliness. The difficulty in making him understand the necessity of sanitary precautions, and care in handling the cows, the milk, and the furniture of the dairy is, I am informed, simply terrible. The exportation of cereals in 1900 had considerably diminished from that of the two preceding years owing to the bad harvest. Nearly two million poods of corn less than in 1899, and five million poods less than in 1898, found its way from Siberia to European Russia.

An article of commerce which is destined to play an important rôle on this line is coal. But the industry is, as yet, absolutely in its infancy. The valley of Kouznetskaya, in the Tomsk Government, between the Altài and Salaìr Mountain ranges, 400 versts long and 100 versts broad, is particularly rich. The best coal is found in the basins of Mlazalooka, Kitât, and Altchidât. From these, five million poods were taken in 1900. The other coal-bearing measures are found

at Balagâny, near Irkûtsk, Ekibâz-Touz, in Semipalàtinsk, and in the Governments of Yeneséisk and Akmolinsk.

There can be no possible doubt that there was a great deal of peculation amongst the underlings at the commencement of the work on this railway. The 18-lb. rails which were at first laid down are gradually being replaced by 22-lb. rails. The sleepers were laid at uneven distances, and neither tarred, creosoted, nor ballasted. This can and has been remedied. The cisterns were too small, and the sidings at many stations, even at Irkûtsk, quite insufficient for the traffic. No fault can be found with the rolling-stock. In all the new carriages bogie wheels and the Westinghouse brake are in use. The fittings are comfortable, even to luxury, and the temperature is kept between 11 and 15 degrees Réaumur, or 57 and 66 degrees Fahrenheit. If the thermometers mark under or above these readings, the passengers are invited to call the guard's attention to the fact. The food is quite good. The attendants are polite and obliging. In fact, it is quite extraordinary to meet with any incivility when in Russia. I myself have travelled some fifty thousand miles by train and steamer, in tarantass or on horseback, in the Empire. I have passed by plain and mountain, road and bridle path, rock and river. I have endured variations of temperature (which affect human tempers) from 57 degrees of frost to 104 degrees Fahrenheit. Yet from Kuopio in Finland, close to the Arctic circle, to Erivân, under the shadow of Ararat; from Vierzbolo to Vladivostok, some 4,500 miles: I never was treated but with the greatest courtesy and kindness.

From Irkûtsk to the Holy Sea, as the Russians call Baikal, is some seventy miles. The train starts at 2, and arrives at Ozero-Baikal station at about 5 a.m. Baikal is a cup in a billowy area of igneous rocks, which plunge promontories deep into its glassy depths. The long lake, covered with ice, is surrounded by a belt of beautiful blue mountains, in whose steep clefts the snow cannot lie. It merely dusts their sky-pointed pinnacles. Baikal is to the Buriâts the home of the spirits of Air and Water. When the wind blows fiercely heaping the ice into great hummocks, and creating great fissures which crack with thunder-like reports; great is the terror of the half Mongolian dwellers on its shores. The ice begins to form in November, but Baikal is never ice-bound until the end of the year. Then the ice forms to a depth of nine feet or more. It is needless to say that no ice-breaker can smash through such a thickness as this. As a consequence, from December until the end of April, the ice-breaking ships "Baikal" and "Angarà" are laid up either at Ozero-Baikal, on the west shore or at Missovàya, on the eastern side of the lake. At each of these places are piers and appliances for repairs, but no docks. Their want is supplied by a floating structure, and for smaller embarcations docks are cut in the ice, in which the hulls are supported, by baulks of timber as in docks of granite.

The two ice-breakers were built by Armstrong, and were sent out in sections, which were placed together at Listlevitchnoye, on the north side of the Angarà, opposite Ozero-Baikal pier. Here are shops, and the residences of the staff, including that of Mr. Handy, the chief engineer; and here also is collected the vast mass of tea in cowhide packages, which has found its way across China, and is waiting for transport to European Russia. Dry though be the details, it

is necessary to give a short description of the two English ships put together by Russian workmen, which have conveyed many thousands of troops, and millions of tons of rails, stores and ammunition, across the frosty inland sea. The "Baikal" is 290 feet long, 57 feet beam, and draws 18 feet forward and 20 feet aft. Her displacement when fully loaded is 4,200 tons, and she makes 15 knots an hour in open water. She has 3 triple-expansion engines with a total of 3,750-H.P. In the stern are two engines, separated by a longitudinal water-tight bulkhead, which work the propellers, whilst another engine placed forward works the fore screw or actual ice-breaker. The screws are provided with four blades. There are fifteen cylindrical boilers enclosed in two compartments separated by transverse water-tight partitions. The ballast consisting of 580 tons of water is distributed in tanks, placed in the double bottom of the ship, and also fore and aft. The water-line belt is of steel plates one inch thick, the sheathing being even and with inner layers. The "Baikal" is provided throughout its length at the level of the ice with wedge-shaped wooden chocks, covered with longitudinal beams, so as to deaden the blows of the ice against her hull, and to render her inner side solid. This belt of timber is about two feet thick. She can carry twenty-five loaded waggons on the main deck on three pairs of rails provided along the ship's axis. Five hundred passengers can be accommodated in the cabins on the upper deck. The "Baikal" can break ice to a depth of four feet. The "Angarà" is more like an ordinary steamer, all her parts were made in England. Her length is 195 feet, beam 34 feet, draught 15 feet, speed 15½ knots. She has triple-expansion engines, which Mr. Handy showed me over, of 1,250-H.P. A transverse water-tight partition separates engine and boiler.

Lake Baikal, in spite of the ice-breakers and Mr. Handy's poorly rewarded services, is at present the great break in the communications between St. Petersburg and Port Arthur. The circum-Baikal Railway, it is said, will be finished in 1905. This is possibly the case. The chief engineer of the line travelled with us from Moscow to Irkûtsk. As he was drunk on two of the seven nights he spent in the train, my opportunities for eliciting information from him were somewhat few. He informed me that he would finish his task in 1905. In the 150 versts (say 100 miles) now remaining unbridged by the railway, no less than twenty-seven tunnels will be cut. For this work Italian workmen are employed—more familiar with blasting and more sober than Russians. The very hard nature of the igneous rocks composing the promontories which had to be cut through (the line elsewhere following the lake shore) much adds to the difficulties of the task. I thought to myself that if the Russian Government had employed a more abstemious gentleman as superintendent, the prospects of the line's early completion might be rosier; but it is ever so in Russia. At the head of the Ministries are capable, earnest, loyal men, who throw themselves heart and soul into the task of carrying out the ideas of their Sovereign, himself a pattern of truth and generous enthusiasm. Of these none is more capable than Michael Ivânovitch, Prince Hilkoff, the Minister of Ways and Communications, who studied railway construction from its very commencement, having himself worked as a plate-layer in America. He steadily pursues his object of improving the communications of Russia. Not only can he point to the realisation of the great Siberian project, but he will soon have another line ready to modify the position of his country in

Asia. This is the Orenburg-Tâshkent Railway, of which the rails are already laid from the Orenburg end as far as the Aral Sea, and from Tâshkent to the town of Turkestân on the Sir-Darya. But under these honest chiefs are thousands of underlings of the great *Tchinovnik* class, the bureaucrats who rule and ruin Russia. The amount of money which has been diverted from its proper destination into the pockets of these people in the matter of the Siberian Railway is enormous. Nearly all the faults of its early construction, now to a great extent remedied, are due to the peculations of these unworthy sons of Russia. Often, too, when they are not themselves dishonest, they are drunken; and thus either wittingly or unwittingly they connive at robbery on the part of others.

Until May, Lake Baikal is frozen three feet thick at least, and the ice-breakers are laid up for the winter. The work of transporting men and stores across the ice is terrible. Numbers of sleighs, which are merely the rough tarantass of the country, taken off wheels and placed on runners of iron, are collected from all parts of East Siberia and Trans-Baikalia. Their drivers are assembled at Listlevitchnoye and Missovàya. It takes all the care of the energetic police to prevent these places becoming dens of drunkenness and infamy. I myself was robbed at Missovàya, and though I seized the scoundrel who had taken my purse and handed him over to the police, I never saw it again. The man had evidently passed it to an accomplice, for although he was conveyed to a shed and stripped of his filthy clothes to his filthier skin, nothing of mine was found on him. These peasants, varnaks, and others, are organised into gangs who work in reliefs of eight hours each. The loading up with men and luggage of a two-horse sleigh, and the journey across the lake, including the change of horses in the centre, take some five hours. Each sleigh takes only two or three men besides the driver. It is most dangerous to march soldiers over the ice for various reasons. If they strayed from the beaten track they would assuredly either be lost in the snow-drifts, or swallowed up in the dangerous crevasses. These crevasses, when first formed, either by the pressure of the ice or wind, fill up with water. This takes some seven or eight hours to freeze over sufficiently thick to allow of a sleigh's passage. In these yawning chasms many a good man and horse have perished. Perhaps the most curious feature of Lake Baikal in winter is the wooden rest house constructed on the ice on the middle of the lake. Many horses are stabled here; the house is warmed to habitable temperature, and men pass many days in it tending the horses. The danger, of course, of residence in this not too prepossessing abode is the possible formation of a crevasse on the very ground—ice, I mean—where the house stands. In such a case most of its inmates would take a bath, compared to which that of Jugurtha would be tepid, whilst some of them would probably be drowned. As, however, the crevasses are seldom more than eight or ten feet wide at the most, the probability of the disappearance of the whole Mid-Baikal hostelry with its stables, yards, offices, etc., is very remote indeed. Still, as a residence on a winter's night, with the outside temperature of 70 degrees Fahr. below freezing point, and the howl of the Arctic wind varied by the thunder of the cracking crevasses, it is not to be recommended to a nervous individual.

The first time we traversed Lake Baikal was on the 3rd May; the ice white and uniform, three feet thick, extended as far as the eye

could reach. We embarked on board the "Angarà" at 6 a.m., and soon afterwards the screw began to revolve. The "Baikal" had left the shore the day before, and had travelled through the ice, fraying a passage some ten yards wide. But the sharp frost has solidified this again. Soon we heard the crunching and grating of the ice lumps as they passed under our bows and away astern. The air was keen and devoid of moisture, the temperature was by no means unpleasant, though low. Wrapped in *shubas*, or huge fur coats with enormous collars, with fur caps and gloves, and high felt *valinki* coming up to our thighs, we were well protected against the cold. In the distance, thirty miles away, we saw the steel-blue mountains capped with snow, but the "Baikal" (ice-breaker) was lost to view in the haze somewhere between us and them. It was curious to look over the bows of the vessel, and to see the huge ice blocks, three feet thick and more, tossed up and crashing into the deep green water. Blue or white, grey or green, according to the reflections, streaked with light when touched by the sun, they formed an ever-changing picture of rare beauty. Over the white surface of the lake the Buriât sleighs were swiftly skimming by twos and threes. No other sign of life appeared; the bleached bones or frozen remains of poor horses, and the débris of a broken sleigh here and there, showed where passengers before us had come to grief. When a horse comes down on the ice no time or trouble is wasted with him. He is cut loose and left to die. The Yablonoï vultures or the hoodie crows pick his bones till he freezes too stiff for their beaks. The passengers and luggage if possible are transferred to another sleigh. Woe to any man left behind; the snow will be his winding sheet. As the "Angarà" pushed farther into the lake the ice became weaker, and piled up in glittering masses to port and starboard. At length we sighted the "Baikal." With volumes of black Irkûtsk coal smoke pouring from her funnels she was charging the unbroken ice. Over this her huge bow, rising and falling slowly, pushed away great masses, which formed again behind. Then, quivering from the impact like a frightened steed, she would put her engines hard astern, and, retiring some hundred yards, return with renewed vigour to the charge. In this manner she was clearing a passage some twenty yards wide, at the rate of four hundred yards an hour.

We are received with a loud shout of welcome by the drivers of some two hundred sledges, *dvaloshadi*, *troiki*, and others, awaiting us in Mid-Baikal. As soon as the steamer stops, the gangway is let down, and the passengers with luggage rush to bargain for the best sledges. Our luggage having first been tossed into the hay at the bottom of the tarantass, we ensconced ourselves anyhow amongst it. Our driver shakes his reins. A *troika* is a three-horsed equipage, from the Russian word *tree*, three. Travellers often imagine that the name describes a particular vehicle, as *telèga*, *tarantàss*, *isvòstschick*, and so on. I shall never forget the Frenchman in Kharkoff, who said: "*J'ai traversé le Caucase dans une troika à quatre chevaux!*" On we dashed, following the others. At times we glided evenly and quietly, at others the runners, sinking into holes in the ice, not only gave us fearful jolts, but covered us with half-frozen water. One gets accustomed in Russia to carriages without springs, the Russians themselves seem perfectly indifferent to this mode of torture. The distant mountains, the gradually disappearing ice breakers, the cavalcade of sledges with

ringing bells tearing through the fresh, crisp air make an interesting picture. At length we came to the end of our twenty-verst journey; the sledge was hauled up the bank of the lake, over great logs and trunks of trees, with the greatest difficulty by our smoking and half exhausted horses. "*Ce n'est pas banal la traversée du Baikal,*" said one of our fellow-passengers.

The country to the east of the Holy Sea is quite different in character from West and Central Siberia. The spurs of the great Yablonoï Chain cut up Trans-Baikalia into a series of picturesque and fertile valleys enclosed by wooded hills. Through these the stately Selengà flows into Lake Baikal. This river, it seems to me, is the true Yeneséi, for under the name of Angarà it flows out of Baikal (as the Rhine passes through the Lake of Geneva) into the Yeneséi, a thousand miles further on. Near Chita rises the Shilka, whose source really constitutes the head waters of the Amûr. So that in Trans-Baikalia we cross the water-parting of the Atlantic and Pacific basins. The climate, too, is milder, the influence of the Pacific Ocean makes itself observed, the winters are shorter, the rainfall greater, and the vegetation more varied and profuse than in Siberia proper. The people seemed more prosperous and less melancholy as one escaped from the weird wraiths of the ever-present birch, with its bark white as the driven snow. Patches of oats and potatoes and carefully-fenced grass fields gave a homely look to the scene. The town of Verkné-Udinsk, in the Selengà Valley, is cheerful in appearance compared with its fellows on the west of the Great Lake. From here will start the projected railway which is to shorten the present journey from St. Petersburg to Pekin by more than a thousand miles. The Valley of the Selengà, with its vast primæval forests, will furnish the timber for its sleepers, and the Russians pretend that they will forge its rails from the local iron ore. Remembering that all the materials for the Siberian Railway were to have been of home production, yet that eventually America and other countries were called upon to furnish them, I take leave to doubt this assertion. But that the new line will be constructed, and that soon, is certain. It will start from Verkné-Udinsk, run up the Selengà Valley, and cross into China at the twin towns of Kiachta and Maimachen. Then, passing through the slight elevations of Mongolia, it will be laid to Urga, where a Cossack post has been carefully sent on, *à la Russe*, to herald its advent amongst the Lhamas. Thence it will run over the waterless, level desert of Gobi, straight to the Great Wall of China. The first town of importance which it will reach will be Kalgàn, in the province of Chi-li, only 300 miles from Pekin. From this point the Chinese Government takes the construction in hand, the Russians having discreetly left to it the task of cutting and tunnelling through the Nor-to and Nan-kow Mountains. The Empress Dowager's favourite, the notorious eunuch, Li, has already contracted a loan of six million roubles with the Russo-Chinese Bank as the first instalment of the cost of the railway. Russian engineers are even now in Mongolia, which, by-the-bye, is ear-marked for future appropriation by the Asiatic party, arranging for the commencement of the survey. It is said that Russian officials are already demanding travellers' passports at Kalgàn and Urga. It is always well to be in time! This was more than I was on the second morning out from Baikal in the train,

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On the evening of the 5th May we halted at the station of Kitaïski Raziezd (Chinese Patrol), 107 versts on from Chìta. This picturesque hamlet, consisting of a church and five houses, stands in the beautiful wooded valley of the Inogdà, which joins the Shìlka a little further down stream. Fishermen were fishing from a huge raft floating in the river, which is here crossed by a single-span latticed girder bridge some 250 feet broad resting on fine granite piers. We were now drawing to the end of the splendid woods of the under features of the Yablonoï Mountains, and nearing the Steppes of Mongolia. The next morning broke raw and gusty. Snow, which here no longer lay on the ground, fell at intervals. When crossing the River Onon we caught a distant glimpse of a Buriât encampment. These interesting people, with whom I became better acquainted later on, are of distinctly Mongolian type, but smaller and more civilised than their cousins across the border. In winter they camp in huts, but in the summer roam, like the Kìrgiz, across the illimitable steppes, moving on to suit the convenience of their enormous flocks and herds. These soon pick up condition browsing on the sweet grasses. Nothing could have been more dreary than the aspect of the country on this 6th of May, when in England the hedges are green and the birds singing merrily. Rolling uplands, brown and bare, without a tree to break their monotony drearily succeed each other. No pelican, no heron stood by the reedy lakelets; no creature, biped or quadruped, appeared on the plains. The hills assumed, not in fancy, but really, grotesque and curiously-pointed forms. One felt from the picture books one had seen that here we indeed were on the confines of the mighty Empire ruled over by the masterful Dowager-Empress, in the name of the Emperor, styled by the Russians the Boghdo-Khân.

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pierce the mountains. As we descended, we entered a zone of beech and other deciduous trees. We saw here the first signs of spring, and it seemed to us that we breathed the air of the Pacific already. At Bûchatû, which place, in spite of its ugly name, is lovely in its bosky solitude, we waited two hours to take up wood for the engine. The restaurant here, though modest in appearance, was well provided, and kept by a Russian who spoke French, much to the delight of our fellow-travellers. Here we found canned peaches from San Francisco, Tân-sân water from Kobé in Japan, Huntley and Palmer's biscuits, and quite a good claret at reasonable prices. The additions were very welcome to our larder, which had become somewhat impoverished since we left Irkûtsk on the 2nd May, just one week before.

On the 9th May we passed Mindu-Hay at 8.5 a.m., Ni-zân-shân at 10 a.m., and arrived at Tsitsikàr at 4 p.m. Tsitsikàr is the capital of Hen-lûng-Tsian, but the Manchû town lies some twelve miles to the north, on the River Nonni. The station is called Tsiao-bûchûtar. To run a railway some miles from the town on the route is the fashion in Russia ever since Nicholas ruled the straight line on the map from Petersburg to Moscow. But here it was a wise provision, as Tsitsikàr is the head-quarters of the Hûn-Houzes, or Red-beards, as the Northern Manchûs are called to distinguish them from the dark-haired Chinese. The Russians have acquired on *lease* here, besides the 100 sâjènes on each side of the railway, some 50 dessiâtines—say, 100 acres. On this a very prosperous-looking small town of wooden huts with small barracks has arisen.

"*Mwi nye ostavim*" ("We don't quit this") remarked one of the good-natured, fair-haired giants here, handling his hand-axe with that dexterity which distinguishes the Russian, as I complimented him on his handiwork. And truly I suppose the Russians will not leave until we clear out of Cairo, and perhaps not even then. Poor food and little of it at Tsitsikàr. Next day rain, with a soft wind. We arrived at the bridge over the River Sungarì, which separates Hen-lûng-tsian from the neighbouring province of Girin, at mid-day. Here we were detained for two hours, as a train had broken down on the bridge in front of us. This gave men an opportunity of closely observing the *Ogranniye straji*, or railway guards. There were barracks in every direction in this vicinity. The guards in their yellow facings looked extremely well and comfortable. A look-out tower of wood, a church, gymnasium, hospital, guard-house, and excellent huts of masonry, with a fine parade-ground, made up a very comfortable residence. At 2 p.m. the signal was given that the line was free, and we steamed slowly over the broad Nonni into Harbin Station.

CAMPAIGNS AGAINST INDIA FROM THE WEST AND THROUGH AFGHÁNISTÁN.

Translated and condensed from the Russian of Major-General L. N. Soboleff, by Lieut.-Colonel W. E. GOWAN, Retired, Bengal Army.

Continued from May JOURNAL, *p.* 550.

WE will now return to the narrative of Nádir-Sháh's advance upon India through the Khaibar Pass. We have already stated that, on the 4th (16th) October, 1738 A.D., the main body of his army had pitched camp to the east of, and close to, the town of Jalálábád. Immediately afterwards it moved forward two marches, preceded by an advanced guard composed of 6,000 men.

News here came in that the Indian governor of Pesháwur had collected a force to oppose the onward march of the Persian army, but, in all probability, the Nizám and Saadat-Khán had succeeded in drawing it over to their side. At any rate, this is the only explanation that can be found to account for the weak opposition that was afterwards offered by this force. For the defence of the famous Khaibar Pass, the same official placed 8,000 Afghans, not in the Pass itself, but at Jamrúd, near to the southern end of it.

Accordingly, on the 6th (18th) October, Nádir-Sháh, after leaving his *impedimenta* and the main body of his army under the command of his son, Nasr-Ullah-Mirza, at Barikáb, pushed forward, with a body of cavalry and other details, to effect a turning movement. He passed through a place called Zeh-Chube, and followed a track, which was extremely difficult and precipitous. After a long *détour* he arrived, at 2 a.m. on the following day, at a point whence a rapid ride, of 10 or 11 miles, brought him close to the enemy's position. Nasir-Khán, who seemed to be aware of this turning movement, had placed his troops in fighting formation, and awaited the enemy's attack; but Nádir-Sháh's selected force came on with such impetuosity that it broke through the Afghán ranks and captured not only their leader but also many of their principal officers. The remainder fled, leaving their camp to fall into the hands of the Persians.

After a halt of three days at Jamrúd, Nádir-Sháh advanced with his main body to Pesháwur, which he occupied.[1]

[1] This account of Nádir-Sháh's advance upon Pesháwur is altogether different to that which is given by Fraser, who says (pp. 134, 135):—"The Afgháns and mountaineers" (*i.e.*, the Pass tribes.—W.E.G.) "very much incommoded him (Nádir-Sháh), and kept him in play for seven weeks; in which time he had a great many men killed and wounded. Seeing there was no forcing the Passes, without much bloodshed, and that the Afgháns

On the 2nd (14th) November, the Persian army moved out of Pesháwur towards Delhi or Shahjahán-ábad. It took several days to construct a bridge of boats across the Indus,[1] but the passage of this river was unopposed. Nor was the fording of the wide Jhelum and Chenáb rivers by the Persian army at all molested. Indeed, no opposition was met with until Wazirábád[2] was reached, when a small body of the Indian army, consisting of about 6,000 men, after a feeble resistance, was cut to pieces by the Persian advance guard. Here, however, news reached Nádir-Sháh's camp that a body of Indians, under the command of Zakaria-Khán, the ruler of the Panjáb, had been assembled near to Lahore with a view to opposing his advance. But no sooner had the Persian army appeared in sight than Zakaria-Khán sent a deputation to declare his allegiance.

The great Turkumán politician could now feel assured that his calculations, which had been based upon deep study of persons and circumstances, were correct, and that if his victorious army were to continue to triumph on the battle-field, his active and skilful diplomacy, covered by an impenetrable veil of secrecy, would also bring with it no less a share of fruit.

The next day Zakaria-Khán came in person to the invader, and offered him rich gifts, including 20 *lakhs* of rupees[3] and many strong camels. He was graciously received and rewarded by Nádir-Sháh, who restored him to his post as governor of Lahore.

From this circumstance it may be concluded that Zakaria-Khán was privy to the conspiracy which had been concocted by the Nizám and Saadat-Khán.

Having thus settled matters relating to the government of the Panjáb, Nádir-Sháh sent back from Lahore a portion of his army, to hold the bridges which he had constructed over the rivers in his rear.

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had fortified themselves on the tops of the hills, he sent them offers of accommodation, to which they came into the more readily, as the *Subahdárs* had sent no assistance; and that they had been four or five years without receiving any of their usual allowance from Court. Upon Nádir-Sháh's paying them a certain sum of money, they not only let him pass unmolested, but several of them enlisted in his army; the other Afgháns, hearing of this, followed their example. So, leaving the main army behind with 10,000 chosen *Kizilbásh* horsemen, in seven days he got to Peishor (Pesháwur.")—W.E.G.

[1] As in the case of previous invaders, the point selected was probably at or near Attock.—W.E.G.

[2] 60 miles to the north of Lahore.—W.E.G.

[3] By this act, Nádir-Sháh shewed that, though the invader of India, he had not appeared as her destroyer, and that he was ready to carry on the government of the country much on the same lines as he found it. This wise and extremely moderate policy indicated that he was possessed of a tolerant mind, great tact, and a large measure of caution in his actions. It also shewed that he had in no wise the conquest of India in view, that his object was rather the restoration of the frontiers of the ancient Persian monarchy—of the limits, that is, which carried Persian territory to the right bank of the Indus. He therefore considered it unwise to break up what had been the work of centuries.—*Author.*

On the 18th (30th) December, having received tidings that Muhammad-Sháh, the Emperor of India, had, at last, begun to concentrate an army for the defence of his capital, Nádir-Sháh marched out of Lahore. His onward route took him over some wide and deep rivers, including the Sutlej, and on the 28th December, 1738 (9th January, 1739), the Persian army encamped at Sirhind. Here Nádir-Sháh received news that the army of the Indian Emperor, of a strength of 30,000 men, and a baggage train of several thousands of camels, and also comprising a strong body of artillery, had taken up a position at Karnál, 90 miles to the north of Delhi, and that various auxiliary contingents were hastening to join it. It will be seen, from the above figures, that Muhammad-Sháh, having been deserted by many of his own vassals, could not place in the field a very powerful force, at least numerically. And we have already learnt that the Nizám and Saadat-Khán, the two most powerful chiefs in India, were in secret treaty with Nádir-Sháh.

Having heard, however, that the position, taken up by the Indian Emperor's forces, was a strong one, Nádir-Sháh sent 6,000 of his horsemen to reconnoitre it, and on the 30th December, 1738 (11th January, 1739), moved with the rest of his army from Sirhind,[1] and, after passing through Rajah Serai, reached Umballa on the following day. Leaving his baggage train here, Nádir-Sháh advanced to Sháh-ábád. It was on this date that the above-mentioned body of horsemen reached Karnál and, having suddenly fallen upon an advanced body of the Indian artillery, took many of them prisoners, and then withdrew to Azim-ábád.

Many of these prisoners were at once sent off to Nádir-Sháh's camp, and he personally elicited from them valuable information as to the strength and position of the army that was opposing him. Thus, these prisoners informed him that the flanks of that position were excellently protected, the right flank by a wide river,[2] the left by a dense wood, and that the front was covered by fortified posts and mounted with a large number of guns. They also said that the various contingents, under the command of the *Wazir*, the Nizám, Khán-Doran, and Saadat-Khán, respectively, had united, and that the total strength of them all was considerable; and besides this force, that the Emperor was awaiting the arrival of fresh bodies. The number of elephants was 2,000. On receipt of these details, Nádir-Sháh was led to suppose that the whole of the Emperor's forces was before him, and that, if this should prove to be the case, he might terminate the campaign by one blow.

But, in order to verify the information which had been given to him by the above prisoners, and, especially, to make himself well acquainted with the approaches to the flanks of the enemy's position, Nádir-Sháh sent off two bodies, to reconnoitre on either flank, and to these was entrusted the task of careful examination of the features of the country round, with a view to determining the best position from which to offer battle. He ordered this report to be sent into Azim-ábád. Meanwhile, on the 2nd (14th) January, the Persian main body advanced from Sháh-ábád to the village of Tilauri, close to Thanésar. The next day, Nádir-Sháh, leaving his army under the command of his son, Nasr-Ullah-Mirza, placed himself at the head of a selected body

[1] 60 miles to the north of Karnál.—W.E.G.

[2] The Jumna.—W.E.G.

of horsemen and rode rapidly towards Azim-ábád, which he reached in less than two hours. This place was still occupied by a body of the enemy, but, as soon as Nádir-Sháh arrived, it was brought under artillery fire, and the garrison surrendered. Whilst awaiting the reports of the two reconnoitring bodies, which he had sent out on either flank of the enemy, Nádir-Sháh learnt, from these fresh prisoners, that the Indian Emperor was relying entirely on the great natural strength of the position which he had taken up.[1] And he also learnt that there were thick woods on *both* flanks of that position, and that, owing to the confined area which had been occupied, the enemy would not be able to make full use of his entire force. He also became aware that, whilst the approaches to the enemy's position were under cover of the woods referred to, there was a considerable amount of open ground immediately opposite the enemy's front. Nádir-Sháh, therefore, abandoned his first intention of making a frontal attack on the enemy's position, and decided to turn his right flank and strike at his rear.

Accordingly, before dawn on the 4th (16th) January, the Persian army advanced to execute the turning movement decided upon, and, having crossed a wide river, arrived at a point about 7 miles from the enemy's flank, and there encamped. From here Nádir-Sháh personally reconnoitred the ground, and, having located the position of the enemy's guns, and satisfied himself on other points, returned to camp. The same evening he received news that another body of the enemy, under Saadat-Khán, of a strength of 30,000 men, including a large complement of artillery, was advancing rapidly towards Karnál from Delhi, and that it had already reached Panipat. He accordingly detached a portion of his forces against this body, but the Persians were not successful in preventing the junction of the enemy's two forces, which occurred at midnight on the 5th (17th) January.

This circumstance led to another change in Nádir-Sháh's plans, for the next day he circled round until he reached the banks of the Jumna, and, after leaving a portion of his main body, under the command of his son, near to Daria Hamún, he, with the rest of his forces, worked round the enemy's right flank, and finally took up a position on a wide plain about 3 or 4 miles from the Indian camp.[2] Whilst this movement was being carried out, Saadat-Khán had apparently opened the battle, after being reinforced with bodies of troops from the Indian camp, which gave him altogether three whole corps equipped with a large complement of artillery. But it was not long before the engagement became a general one, and on the result of it depended the fate of Nádir-Sháh's campaign.

"At the sight of this numerous host, whose front extended to a

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[1] As between this narrative and that found in the pages of Fraser, there is some discrepancy in dates. On page 152 of Fraser's account we read:—"On the 12th of *Zeccadih* (corresponding with February 11th, 1739) the Royal Camp (*i.e.*, of the Emperor of India), in circuit about seven *koss* (a *koss*=about 2 miles ∴ 14 miles), was pitched in the fields of Karnál. It was surrounded with *murchas* (breastworks) on which were mounted nearly 5,000 (? 500) guns (cannon, etc.).—W.E.G.

[2] Probably the plain between the Ali-Mardán canal and the river Jumna.—W.E.G.

distance of 2 miles,"[1] says Mirza-Mehdi, Nádir-Sháh's historian, "the conqueror of the world, who had been so eagerly waiting for the coming of this day, was in no way astonished, but was rather thrilled with delight." Providing a small force for the protection of his camp, Nádir-Sháh sent orders to his son and to his other generals to take up the several positions allotted to them, and not to stir from them until they received his personal instructions. He then made skilful dispositions for his large complement of artillery, which soon began to bombard the whole area of the enemy's position. The fight, which began at noon on the 6th (18th) January, lasted till 5 p.m. on the same date.

The attack of the Persians was so impetuous, and the movements of their several columns were so stealthily conducted that the Indian army, though it for some time maintained a hand-to-hand engagement, was utterly defeated.

Nevertheless, Nádir-Sháh had to place at least some of his reserves in the fighting line.[2]

Saadat-Khán was the first to quit the field.[3] Khán-Dorán, the Indian Emperor's evil genius, was mortally wounded. The Emperor, attended by the Nizám, his sworn, though secret, foe, and one who, it may be, was intriguing with Nádir-Sháh even on the battle-field, shut himself up with the remains of his army in his fortified camp.

The losses of the Indian army amounted to 30,000 in killed alone, and many more were taken prisoners, at least, so we are told by Nádir-Sháh's historian. But, from a letter from Nádir-Sháh, addressed to his eldest son, Vice-Regent of Persia—a letter of which the historian Mirza-Mehdi may possibly have had no knowledge—we learn that the Indians left more than 20,000 on the battle-field, whilst the number of prisoners taken by the Persians was still more considerable.[4]

"As soon as the affair was concluded," writes Nádir-Sháh, "we surrounded the Emperor's camp and adopted measures to cut off all connection with neighbouring places, and, at the same time, got ready our guns and mortars for the destruction of the forts, behind which the remainder of the enemy's forces had taken shelter."

This being the case, Nádir-Sháh was in no hurry to carry the place by storm, since he had enclosed the defeated forces as with a net.

A large number of elephants, guns, and other booty fell into the hands of the victors.

Even at this stage, therefore, Nádir-Sháh could count upon the acquisition of the fabulous wealth of India, and he could have under-

[1] According to information gathered by Fraser, the total number of the heterogeneous forces collected in Muhammad-Sháh's camp was 200,000 horse and foot.—W.E.G.

[2] Fraser's account, which is altogether different, says that, with the exception of 5,000 horsemen, none of Nádir-Sháh's main body was engaged.—W.E.G.

[3] Fraser says that he and Khán-Dorán's youngest son were taken prisoners, and that Muzaffar-Khán, Khán-Dorán's brother, was killed. Nor do these names, by any means, complete the list of losses.—W.E.G.

[4] No mention is here made of the Persian losses; but Fraser, quoting a letter from Muhammad-Sháh's camp, puts them down thus:—Killed, 7 officers and 2,500 men; wounded, 5,000.—W.E.G.

See Malcolm's "History of Persia."—*Author.*

taken the task—not a difficult one—of governing a conglomeration of peoples like the inhabitants of that vast Peninsula; he could, like Bábar had done, have held India for himself, and he could have founded, in that country, a Turkumán Imperial dynasty. But as a man who was deserving of world-wide fame, he was not given to delusive impulses. At this time he was more than 50 years old, and the severe school, in which his youth and maturer years had been passed, had left its mark upon him. He, therefore, cast from him every thought, if indeed he ever had one, of setting up his own undisputed authority over Hindustán. Moreover, it was not magnificent India that entirely monopolised his attention, for he had already meditated on the conquest of Turkistán, and his mind, with the swiftness of lightning, passed from one country to another.

And having come to so wise a decision, Nádir-Sháh desired to secure, unharmed, the person of the Emperor Muhammad-Sháh.

So, at least, we gather from the narrative of the battle before Karnál, as put before us by Mirza-Mehdi. But, in this account, he altogether passes over the part played by the Nizám and Saadat-Khán, persons who notoriously betrayed their Sovereign, and, by so doing, greatly contributed to the triumph of the famous Turkumán. An historian of India,[1] who has described Nádir-Sháh's invasion, gives us a fuller account of this victory at Karnál. and he gives us also the following version of the reasons, which led to the defeat of the Indian Mussulmán forces. "The Indians," (whom he calls "Moguls," or, what is the same thing, "Mongols") "constructed a fortified camp, in which they mounted 500 guns. The Emperor was in personal command of the army, which was made up of 150,000 horsemen, besides infantry of the Militia standard. This army was hurriedly enrolled by the several governors (Umras) from their respective provinces. In the Imperial camp any notion of subordination was entirely wanting, each commander acting precisely as he wished, to the complete subversion of all discipline. On the other hand, the Persian army. though greatly inferior in numbers, had been brought to a high state of efficiency, and each of its officers occupied his appointed place. Nádir-Sháh's enforcement of discipline was so strict that he very often visited with punishment even generals in command of large bodies of his troops. On the day of the battle, when Saadat-Khán joined forces with the Emperor, he warned his Sovereign that the Persians had attacked his transport train. He did this in accordance with a mutual understanding between Nádir-Sháh and himself, and the object of the intimation was to induce Muhammad-Sháh to come out of his fortified camp to his assistance. Saadat-Khán was implicated in the mock engagement, in which the Persians pretended that 10,000 of their horsemen had been compelled to retreat. Muhammad-Sháh, who, at first, did not wish to give battle, finally consented to send out 15,000 horsemen, under the command of Khán-Dorán, to co-operate with Saadat-Khán, with a view to completing the apparent discomfiture of the Persians. As soon as this step had been taken by the unsuspecting Indian Emperor, Saadat-Khán surrendered with his entire force to the Persians, thus leaving Khán-Dorán to meet

[1] General Soboleff does not here give his name, but as in other passages he quotes from the writings of Sir John Malcolm, presumably it is to these he here refers.—W.E.G.

the enemy's attack from all sides. Even then Khán-Dorán inflicted on the Persians a terrible defeat, and he would not withdraw until a second order from Muhammad-Sháh to do so reached him, and until he had received a mortal wound. Muhammad-Sháh had, by this time, lost all confidence in the Nizám-ul-Mulk. And although Khán-Dorán, on being carried in to the Emperor's tent, earnestly besought his permission to renew the fight with his own body of troops, in which there was still left some 38,000 men and 200 guns, the unfortunate Sovereign remained in a state of complete irresolution. On the one hand, he feared that, in the absence of Khán-Dorán, he would fall into the clutches of the Nizám; and, on the other hand, he dared not send the latter against the Persians lest he should join forces with them. And when, at last, he had come to some decision as to what course of action he would adopt, the supreme moment for snatching a victory had been lost. Meanwhile, Khán-Dorán's troops were holding their own against the Persians, under the leadership of his brave brother Muzaffar-Khán, who had succeeded to his place. But, as they received no support, Muzaffar-Khán himself, a son of Khán-Dorán, and 27 senior officers were slain. No less than 10,000 of the Indian troops perished in this desperate fight, in which Nádir-Sháh might have suffered a defeat (indeed, many of his troops had to ride 40 miles so as to reach the field of battle in time). Meanwhile, Khán-Dorán, although mortally wounded, had an interview the same night with the Emperor. At this interview it was decided to renew the attack on the Persians the next day. But Khán-Dorán died before dawn, and it was suspected that into the bandage, which had been placed upon his wound, poison had been introduced. Although this courageous man carried away with him the regrets of his Sovereign, the Nizám still remained to control affairs, for even in his own army the Emperor's authority was *nil*. And so the traitor, who had already made sure of the integrity of his own virtual sovereignty in the Deccan, proposed a treaty to Nádir-Sháh, whereby, if he would consent to give up all right to the territory of the Indian Emperor, he should receive 50 *lakhs* of rupees. So far then was Nádir-Sháh, at this time, from the realisation of his hopes, viz., the conquest of the Indian Empire. Saadat-Khán, moreover, who was, at this time, a prisoner in Nádir-Sháh's camp, did all he could to prevent this treaty being accepted. Indeed, he went even so far as to promise Nádir-Sháh two *krors* of rupees if he would continue the struggle with the Nizám, and place him, Saadat-Khán, at the head of the Government of India. But the Nizám, who had now been installed in the office of Commander-in-Chief, had not yet lost heart, and, moreover, he still conceived it his duty to enter into a struggle with Nádir-Sháh on his own account. But the latter had, by this time, seized all the important strategical points, and had barred all the roads by which provisions for the beleaguered Indian army could be brought. Whereupon the Nizám, seeing no other way of getting out of the trap, entered upon further negotiations, and made Nádir-Sháh proposals of a still more favourable kind than the one put forward by Saadat-Khán. Muhammad-Sháh, now fully aware of the treachery of these two high officials, each of whom was trafficking on his own account, at the expense of the State, therefore determined to throw himself into the arms of Nádir-Sháh and to appeal to his mercy."

This picture, drawn as it is in bright colouring, in all probability answers to the truth. And yet it is a picture that has once more

confirmed the view that Hindustán, whilst constituting a completely unique part of the world, by reason of her natural conditions, will not admit of the uncontested sovereignty of any one particular dynasty. There have, no doubt, been epochs in her history when certain talented representatives of the more famous dynasties have succeeded in setting up their own sovereignty over the greater part of her vast peninsula; but this phenomenon has been the exception, and has arisen through a series of other phenomena, of an opposite character, in the historical life of this surprising country. Men like Akbár and Aurangzib, have, indeed, succeeded in subduing the greater part of the sovereignties of India, and yet their own sway has never been altogether undisputed, for they have often been obliged to consolidate their power by a series of victorious operations. And, even in the case of these great monarchs, and also of the other talented founders of dynasties preceding that of the house of Timur, India has never constituted that absolute monarchy by which we, Europeans, understand the term. *India has always consisted of a group of separate sovereignties*, each with its own army and its own peculiar autonomy. And the independence of each, to a greater or less degree, has depended on its own capacity and strength, and on the circumstances of a particular time. Thus, there have been times when, as a more than ordinarily talented potentate has arisen, second-rate rulers have been obliged to submit themselves to him. But as each ruling dynasty has begun to grow weak, India has easily and rapidly fallen once more into her component parts, and has again presented the appearance of several groups of States, the sovereignty of each of which has fallen to the lot of the most powerful and more fortunate rulers. Moreover, beginning with the Tenth Century of the Christian era, when warlike Muhammadans carried the flame of their conquests to her Peninsula, India has, speaking generally, been divided into Mussulmán and Hindu Sovereignties, and, to the reciprocal contest of such Sovereigns there has been added the more terrible strife of peoples of diverse religious beliefs. As a political body corporate, therefore, India has been still more weakened.

This peculiarly complex characteristic in the political life of the Indian peninsula has considerably facilitated the inroads upon it of the various conquerors and warlike races of other countries. Beginning with Alexander the Great, and ending with Nádir-Sháh, *all conquerors* have taken advantage of this feature of the historical life of the inhabitants of the Indian peninsula, and, as each invader has followed another for more than twelve centuries successively, and has penetrated to the heart of the country, *he has always found there active allies.* We have already seen how skilfully the famous Nádir-Sháh took advantage of this characteristic feature of Indian cosmogony.

We have said above that Muhammad-Sháh, perceiving, at last, that he was surrounded by treachery on all sides, after enduring a close blockade for the space of only three days, resolved to relinquish his title of "Emperor of India," and, after removing his jewelled turban from his head, issued forth, attended by his nobles and other dignitaries, to declare his submission to Nádir-Sháh. On hearing of his approach, Nádir-Sháh sent his own son to meet him; received him in person at the entrance to his tent, showed him every mark of respect, as befitting his rank, and, taking him by the hand, caused him to sit beside him.

According to Mirza-Mehdi, a long and interesting conversation took place, in the course of which Nádir-Sháh reproached [1] the Indian Emperor for the weakness he had shown, in the matter of the Mahratta inroads, whereby he had consented to pay them tribute, and he also twitted him for having allowed himself to suddenly come and seize his person, right in the very centre of his dominions, without having taken a single step to prevent his invasion of India at the outset. The same eye-witness of this astonishing scene then tells us that when the above interview was over, Nádir-Sháh consulted with his own *Wazir* as to what should be done with Muhammad-Sháh. The Wazir observed that it would be best to send the discrowned Emperor back to the fortified camp, so as to enable him to form for himself a fresh party, and thus do something to weaken that of the dangerous Nizám, because if Muhammad-Sháh were to be detained as a prisoner in his master's camp, the Nizám would thereby become still more dangerous. Accordingly, Muhammad-Sháh was sent back to his camp, and the blockade continued.

The very next day, however, Muhammad-Sháh again made his appearance in Nádir-Sháh's camp, but this time there came with him a considerable number of the principal feudatory chiefs. Mirza-Mehdi tells us that at this second interview between Nádir-Sháh and his captive, the former handed to him the State seal of his own Empire, thus acknowledging his own inferiority before Muhammad-Sháh, and at this unlooked-for attitude on the part of his conqueror, Muhammad-Sháh was covered with confusion.

The historian then goes on to say that Nádir-Sháh informed Muhammad-Sháh that though it was not his intention to enter upon the conquest of India, still he must, of course, be indemnified for the expenses of the war. "My tired army will, therefore," he said, "rest in the City of Delhi." To this emphatic declaration the captured monarch made no serious objections. After again sending Muhammad-Sháh back to his own camp, Nádir-Sháh despatched a high official to summon the Nizám to appear before him. In the belief that the Persian Sovereign entertained naught but the most friendly sentiments towards himself, the Nizám hastened to comply with the summons. It may well be that there passed through his brain, at such a moment, the thought that the attainment of the one object, for which he had striven in the course of his long career, was near at hand. But, unfortunately for him, Nádir-Sháh was more crafty than all the most cunning of the rogues in India at that time.

Attended, therefore, by those in his deep counsels, the Nizám went in haste to Nádir-Sháh's camp. But malice and terror combined came over his countenance when he was informed that he would be

[1] Fraser gives the text of a letter which Nádir-Sháh had already addressed to Muhammad-Sháh on this very subject. It begins as follows:—"Be it clear to the enlightened mind of Your High Majesty, that my coming to Kábul and possessing myself thereof was purely out of zeal for Islám and out of friendship for you. I never could have imagined that the wretches (the Mahrattas or Ganims) of the Deccan should impose a tribute on the dominions of the King of Mussulmáns. My stay on this side the Attock (Indus) is with a view that, should these infidels again advance towards Hindustán, I may send an army of the victorious *Kizil-Básh* (red-turbaned) to drive them into the abyss of hell. . . . ."

The above letter was received in the beginning of Jamádi-al-Awal 1151 A.H. (corresponding with the middle of August, 1738, A.D.)—W.E.G.

detained as a prisoner. Meanwhile, as soon as Muhammad-Sháh heard that his sworn enemy had been summoned to the tent of his conqueror, he was filled with alarm lest bad consequences for himself would result, and so he once more went to the Persian camp. He then saw that arrangements had there been made for the detention of the greater number of the feudatory chiefs of the Empire, and that quarters had been prepared for himself close to Nádir-Sháh's tent. Here he was allowed a suite of 300 followers, and a guard of 1,000 horsemen was detailed for his safe-keeping. Similar arrangements were made in the case of Muhammad-Sháh's *Wazir* and of all the principal vassals and feudatories of the Indian Empire.

Nádir-Sháh, having thus secured all the leading men, and having thereby deprived the Indian army of its senior officers, was enabled to go in person, without any risk of opposition, to the Indian fortified camp. He there seized the treasure, arms, ammunition, and all the military stores, and at once made arrangements for the immediate despatch of the greater part of the Indian artillery to Kábul.

After securing the Imperial treasure, he gave orders for the issue of three months' pay as a gratuity to every man in his army.[1]

On the 21st January (2nd February), the Persian army advanced towards Delhi.

The following interesting description of the order of march is collated from Fraser:—"On the 1st of *Zilhijjah* (corresponding with 1st March), Nádir-Sháh set out, attended by 20,000 choice horsemen; 4,000 *arquebusiers* were detached as a *Kuruk* [or guard over the Imperial *harem*—W.E.G.], and between this part of the column and the rest of the army there was a distance of nearly one *Koss* (2 miles). Then came Muhammad-Sháh with 40 or 50 of his principal retainers, under a guard of 10,000 *Kizil-Básh* horsemen, and 2,000 *arquebusiers*.[2] On one side of him rode Sar-Baland-Khán, followed by his troops and baggage, and behind these again the baggage of Muhammad-Sháh. On the other side were the troops and baggage of Nizám-ul-Mulk, and of Kamar-ud-din-Khán, and behind them Muhammad-Khán-Bangash, with his troops and baggage. Then came, as a rear guard of the entire column of route, the rest of the Persian army."

The several intervals appear to have varied from an arrow's flight to 1 mile, except in the case of the central bodies, but, between them all, rode *Kizil-Básh* horsemen, to prevent any extension or diminution of the appointed distances, and to make each party move exactly as it had been directed to do.

Fraser (from whom General Soboleff appears to have gathered this portion of his information) also adds: "The compass of ground they (the several bodies of troops) covered in their march was 10

[1] Fraser says that this grant included servants, attendants, and camp followers of every kind, and he adds: "Just as he had done before at Kandahár upon taking it" (p. 175).—W.E.G.

[2] As we have already seen from the narrative of Nádir-Sháh's several victories, his army was composed chiefly of Turkumáns, Kurds, Georgians, Afgháns, Uzbaks, Hazárás, Bakhtiáris, and other races. There were, indeed, hardly any Persians, properly so called, in it. Hence it would be more regular to style it "the army of Nádir" rather than "the Persian Army.—*Author*. And be it noted that most of these men were mounted, whereas but a small proportion of Muhammad-Sháh's levies were so equipped.—W.E.G.

miles[1] in depth, and 6 miles in breadth, and this method was observed in every day's march."

The march from Karnál to Delhi occupied five days, and the route lay through Panipat, Sonpat, and Nireli.

On the 27th January (8th February) the whole cortege entered Delhi, and pitched camp in the Shalimár[2] Gardens. The next day Muhammad-Sháh was sent, under escort, to the Imperial Palace, where he was allotted quarters in the Suleimán Burj (Solomon's Tower), near the *Ayesh-Mahal* (Palace of Joy), where his "guest," as Nádir-Sháh called himself, was to reside.

But it was not until the following day that Nádir-Sháh, attended by 20,000 horsemen, passed through the gates of the palace, and even then he left the rest of his army outside the city walls because of the turbulent attitude of the inhabitants.

As soon as the stern Turkumán had settled himself in the Imperial palace at Delhi, he ordered into his presence the Nizám and Saadat-Khán, the authors of this easy victory and triumph over the Indian Emperor, and addressed them as follows: — "How is it that you have been traitors and ungrateful towards your Emperor and your Fatherland? You, who occupied high positions in the Empire, invited me to come from the heart of my possessions, to destroy your Emperor and your own selves. But, for so doing, you shall experience the full force of the vengeance of God, whose agent I am!" Having so said, Nádir-Sháh deeply insulted each of them by spitting upon his beard, and then drove them out of his sight. Altogether thus disillusionised by the non-attainment of their personal ends, the Nizám observed to Saadat-Khán, that, after such dishonour, it only remained for them to seek death. With this sentiment of the wily ruler of the Deccan the conqueror of the Mahrattas expressed himself in full concurrence, and each went to his own abode after mutually resolving to destroy himself with poison. But Saadat-Khán, knowing the shiftiness of his fellow conspirator, and fearing lest he should be again deceived, sent an expert spy to watch whether the Nizám was really intending to carry out the reciprocal stipulation. Thereon the Nizám, apparently divining the existence of suspicion on the part of his former ally, but now rival, concocted the following plan in order to completely deceive him. He summoned one of his own slaves and instructed him to fill a cup with some mixture, and to present it to him with every sign of aversion. On this being done, the Nizám displayed every outward sign of terror and disquietude, such as might be inspired at the sight of a cup of poison. He then knelt down, apparently in earnest prayer, and, having done so, drank off the contents of the cup, which, however, contained no poison at all, but only a harmless liquid. Nevertheless, he contrived to deceive Saadat-Khán's spy, who went and told his master what he had witnessed. Whereupon the latter, ashamed to show himself more of a coward than the Nizám, took a dose of real poison and died. The aged Nizám, who lived through all the horrors of Nádir-Sháh's invasion, used afterwards to relate, without any sense of shame, how skilfully he had cajoled Saadat-Khán to the very end.

[1] *i.e.*, reckoning one *Koss* as equal to two miles.—W.E.G.

[2] Mr. H. C. Fanshawe, C.S.I., in his book entitled "*Dehli, Past and Present*," says that this word *Shalimar* is derived from two Hindi or Sanskrit words, viz., *Shala* (abode) and *Már* (joy).—W.E.G.

(To be continued.)

THE SHORT LEE-ENFIELD RIFLE MARK I.

Communicated by the DIRECTOR OF ARTILLERY.

PRIOR to the South African War, the question of the modification of the Service rifle for infantry had been considered, and a small Committee had been appointed to devise such a rifle. The Committee's labours were suspended owing to the outbreak of the war.

The experiences of the South African War brought into prominence the great importance of accurate and rapid snap-shooting at ranges such as 600 yards and under, and during the war Lord Roberts telegraphed home pressing for the short rifle to be proceeded with. It was therefore decided to carry out trials with a rifle which would be capable of using the existing Service ·303-inch ammunition, and which would be more suitable for the above-mentioned class of shooting than the existing rifle, and would be at least equal to the latter in other respects.

The South African War also showed that greatly increased importance must be attached to the fire action of cavalry and other mounted troops, and that the fire-arm, and not the *arme blanche*, must be regarded as the principal weapon of the cavalry. There was ample evidence that the cavalry considered themselves placed at a disadvantage by having carbines, and in consequence these were withdrawn from, and long rifles given to, them. These conclusions necessitated the provision of the best weapon possible for mounted troops, and it was held that a rifle about five inches shorter than the Lee-Enfield was the longest which could be conveniently carried by cavalry.

Prolonged trials were therefore carried out to see if a shortened rifle could be produced which would be at least as accurate and effective as the long rifle, and would meet modern conditions more satisfactorily in such respects as rapidity and ease of loading, handling and aiming, accuracy and convenience of sighting arrangements, lightness, etc., and would be suitable for all arms of the Service.

As preliminary trials showed promise that these conditions could be met, one thousand shortened rifles were issued in 1902 to the Royal Navy, Royal Marines, and the first three army corps. One hundred of these rifles were subsequently sent to Somaliland. The rifles were not all of the same pattern, but embodied variations in sights, etc.—*e.g.*, windgauges, bead foresight, etc.

After a full consideration of the reports received from the above sources, the new pattern short Lee-Enfield Rifle was adopted, as it was considered to meet the requirements of modern fighting, both for mounted troops and infantry, better than a rifle of greater length.[1]

[1] After trials of a new pattern rifle of the usual length, and with the Mauser magazine system and charger loading, the United States have decided to adopt as an universal arm, a rifle of that nature, but with a 24-inch barrel, in place of their present Krag Jorgensen rifle. It is understood that this conclusion has been come to partly on account of their experience in the Philippines and partly from a study of the war in South Africa.

The Russian cavalry has for a long time been armed with a rifle which is practically an universal weapon, the same as their infantry weapon. It is 51¼ inches long.

Description.

The new rifle is five inches shorter and 1 lb. to 1¼ lbs. lighter than the present Lee-Enfield Mark I* Rifle.

The magazine holds ten rounds, and is filled by cartridges carried in chargers holding five rounds each in a manner similar to the Mauser rifle. Guides to hold the charger are fitted on the bolt-head and body, and the five cartridges can be pressed out of it into the magazine by the thumb, and to facilitate this the body is cut away somewhat on the left side. There is no cut-off, except in rifles made for the Navy. There is a safety catch on the left of the body which locks the bolt and cocking-piece in either the full cock or fired position. This catch is also made so as to obviate the possibility of the bolt being lost by mounted troops.

The barrel is rather smaller in external diameter and five inches shorter than that of the existing rifle—*i.e.*, 25·2 inches long instead of 30·2 inches.[1] The foresight block carries a barley-corn, which is adjusted before issue, so as to suit the shooting of the rifle. Hitherto the sighting of all rifles of one pattern has been determined by trials of a number of that pattern, whereby the best average position of the foresight has been ascertained, and then all rifles of that pattern have had their foresights (which were not adjustable) accurately manufactured in that position; this has been ensured by careful gauging, but the correctness of the sighting of each rifle has not been tested by shooting. As, however, the shooting of every rifle of one pattern is not identical, it has been decided that in future each rifle before issue is to have its sight tested by firing, and adjusted by the use of suitable barley-corns. High and low barley-corns differ from the normal by ·015 inch.

The back sight (which is very similar to that of the Krag Jorgensen Rifle) consists of a leaf pivoted to the front end of the bed; it is raised by moving the slide which rests on curved ramps, and which is held in position by catches which engage in a toothed rack on each side of the leaf; the rack allows of the sight being set for every 50 yards from 200 to 2,000. The catches are released by studs made of bone, so that they can be handled however hot the rifle may be. The V is a small one, as that was generally preferred after trials of different shapes. A pair of ears, or lugs, is provided, so as to protect the cap of the back sight. This cap is capable of a fine adjustment, by means of which any elevation intermediate between the 50-yard intervals can be given; the graduations of the fine adjustment fitting are equivalent to six inches on a vertical target at 100 yards range. There is a wind-gauge with similar graduations. A dial sight is provided, ranging from 1,600 to 2,800 yards.

The bolt and body are generally similar to those of the Lee-Enfield rifle, except for the fittings for charger loading alluded to above, the abolition of the bolt cover and of the extension for the safety catch. The bolt handle is set closer to the body than formerly. A slot cut in the bolt-head acts as a key when stripping and assembling

[1] The barrel of the cavalry carbine is 21 inches long.

the striker and cocking-piece, and the bolt can thus be stripped without the aid of tools.

The trigger is so constructed as to give a double or drag pull off, the total pull being 5 to 6 lbs., of which the first pull is from 3 to 4 lbs.

The butt plate is of steel, and there is no butt trap. The cleaning material is carried on the man's equipment.

A nose-cap is attached to the fore-end and carries two high wings to protect the fore-sight, and an extension on which the bayonet fixes; this latter is, therefore, not attached directly to the barrel.

The stock is divided into butt and fore-end. Butts of three lengths (half an inch difference between each size) are used; they are secured by a stock bolt which is prevented from unscrewing by a keeper plate on the fore-end. The fore-end and a long hand-guard completely cover the barrel, except where the sights are attached, so that it can be easily handled when hot.

Special care has been taken to keep the barrel free in the fore-end, and not to allow it to be gripped tightly by the stock or bands as, if gripped, the shooting may be seriously affected.

Except for the above points and a few minor details, the fittings are similar to those of the Lee-Enfield Rifle Mark I*.

The following are some of the chief particulars:—

Length of barrel	$25\frac{3}{16}$ inches.
Calibre	·303 inch.
Rifling	Enfield.
Grooves, number	5.
Width of lands	·0936 inch.
Twist, left-handed	1 turn in 10 inches.
Distance between barleycorn and back sight V.	1 foot $7\frac{5}{32}$ inches.
Length of rifle	3 feet $8\frac{9}{16}$,,
Length of rifle with sword bayonet	4 ,, $8\frac{11}{16}$,,
Weight of rifle, magazine empty	8 lbs. $2\frac{1}{2}$ ozs.

The sword-bayonet differs from the existing pattern in the fittings for attachment to the rifle; it weighs 1 lb. $0\frac{1}{2}$ oz., and its blade is $12\frac{1}{2}$ inches long.

The charger is made of steel, and is larger than that for the rimless Mauser cartridges.

Ballistic and other Trials of Short Rifle.

The mean muzzle velocity of the shortened rifle is 2,025 feet seconds, or about 30 feet seconds greater than that of the long rifle. Prolonged accuracy trials have shown that when fired from the shoulder there is very little to choose in point of accuracy between the shortened rifle and the Lee-Enfield. The following were some of the figures of merit obtained:—

Figure of Merit (in feet).

	Mean of 12 Rifles.				
	500 yards.	600 yards.	1,000 yards.	1,500 yards.	1,700 yards.
	feet.	feet.	feet.	feet.	feet.
Short Rifles	·67	·65	1·89	3·75	5·79
Lee-Enfield Mark I.*	·62	·74	1·72	4·43	5·88

On a different occasion mean figures of merit of ·59 foot and ·67 foot respectively were obtained at 600 yards in a covered range with six specially selected ·256-inch Mannlichers and six specially selected ·276-inch Mausers.

In another series of trials, the following figures of merit have been obtained, all the rifles being fired under the same conditions:—

Figure of Merit.

Rifle.	Calibre.	At 500 yards.	At 1,000 yards.	At 1,500 yards
	inches.	feet.	feet.	feet.
Lee-Enfield[1]	·303	·32	1·39	2·22
German service Mauser 1898 Model	·311	·77	1·52	4·02
Belgian Mauser Rifle...	·276	·89	2·48	5·89
French Label	·315	·58	1·29	3·42
Italian Mannlicher ...	·256	·73	2·04	3·04
U.S.A. Krag Jorgensen	·3	·41	—	—

After firing 10,000 rounds from one of the short barrels it gave a figure of merit at 600 yards only slightly inferior to that of a new barrel. There was, of course, a fall of velocity.

The following is an abstract of some of the results obtained by (a) two highly-trained men, (b) two ordinarily-trained men, when using single loading and charger loading; one minute was allowed for each series; ammunition in bandoliers in each case.

I. *Distance, 100 yards; Position, standing; Target, 3rd class.*

Firers.	Single loading.			Charger loading.		
	Average numbers of					
	Rounds fired.	Hits obtained.	Points obtained.	Rounds fired.	Hits obtained.	Points obtained.
Highly trained ...	11·5	10	28	23	21·5	55
Ordinarily trained ...	10·5	9·5	26	19	14·5	35·5

II. *Distance, 200 yards; Position, kneeling; Target, 3rd class.*

Highly trained ...	14	12	28·5	22	18	44
Ordinarily trained ...	10·5	6·5	14·0	17	12·5	31·5

III. *Distance, 500 yards; Position, lying; Target, 2nd class.*

Highly trained ...	11	9·5	28	16	14·5	40
Ordinarily trained ...	9·5	7	17	15	10·5	29

The recoils of the new and old rifles have been measured by the Gunmakers' Association, London, as 13·4 feet lbs. and 11·9 feet lbs. respectively. (That of a shot gun weighing 7 lbs. is about 24 lbs.)

[1] This was the long rifle; as stated above, there is little to choose between it and the short rifle.

As regards strength, every rifle with its action assembled has to stand a proof charge giving a pressure of between 20 and 21½ tons per square inch; the maximum pressure which the ammunition is allowed to give at proof is 17 tons. The rifle has besides been found to stand repeated pressures of 22 tons, and the body and bolt have not been damaged by repeated pressures of 29 tons.

The action of the new rifle has passed successfully through severe dust and rust trials, and its general serviceability is perhaps best attested by the fact that, besides its trials in Somaliland, it is practically the same as that of the Service rifle which was introduced in 1888, and which, besides minor operations, has passed successfully through Indian North-West Frontier operations of 1895 and 1897, the Atbara-Omdurman campaign of 1898, and the South African War.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Rear-Admirals — Sir E. Chichester, Bart, C.B., C.M.G., to be Admiral-Superintendent at Gibraltar; F. C. B. Bridgeman to be Second-in-Command of the Channel Fleet. Captains—W. O. Boothby to "Immortalité"; C. R. Keppel, C.B., D.S.O., to "Implacable"; A. A. C. Galloway to "Revenge"; E. E. Bradford to "Exmouth"; A. P. Stoddart to "Royal Oak"; O. De B. Brock to "Enchantress"; J. L. Marx, M.V.O., to "Suffolk"; A. W. Weymouth to "Minerva"; A. T. Stuart to "Terrible"; S. E. Erskine to "Leander"; C. Burney to "Triumph"; E. J. Fleet to "Swiftsure"; F. St. G. Rich to "Empress of India"; F. C. M. Noel to "Hood"; E. F. B. Charlton to "Halcyon."

Rear-Admiral Sir E. Chichester, Bart., C.B., C.M.G., is selected to succeed Vice-Admiral Sir W. A. D. Acland, Bart, C.V.O., as Superintendent of Gibraltar Dockyard. Rear-Admiral F. C. B. Bridgeman will hoist his flag on the 25th inst. on board the "Victorious" at Devonport, as Second-in-Command of the Channel Fleet, in succession to Rear-Admiral the Hon. H. Lambton, C.B., C.V.O., who has completed his twelve months' period of service in that appointment.

The second-class battle-ship "Anson" paid off on the 6th ult. at Chatham from the Home Fleet. The first-class battle-ship "Exmouth" arrived at Chatham on the 16th ult. and paid off on the 17th ult., her crew turning over to the new first-class battle-ship "Prince of Wales," which left Sheerness on the 20th ult. for the Mediterranean; the "Exmouth" commissioned the following day as flag-ship of Sir A. K. Wilson, K.C.B., V.C., Commander-in-Chief of the Home Fleet, the crew of the first-class cruiser "Hawke," which paid off at Chatham on the 17th ult., turning over to her.

The first-class cruiser "Theseus" commissioned at Chatham on the 11th ult. for the Channel Fleet, leaving on the 19th ult. for Gibraltar to join Lord C. Beresford's flag. The first-class cruiser "St. George," flying the flag of Vice-Admiral Sir A. K. Moore, K.C.B., C.M.G., late Commander-

in-Chief of the Cape Station, arrived at Portsmouth on the 16th ult. Sir Arthur's flag was struck at sunset on the 19th ult., and the ship will pay off at Portsmouth. The first-class cruiser "Hawke," from the Home Fleet, paid off at Chatham on the 17th ult, her crew turning over to the "Exmouth" on the following day. The first-class cruiser "St. George" left Portsmouth for Gibraltar on the 19th ult., where she arrived on the 24th ult., relieving the second-class cruiser "Cambrian," as Commodore's ship of the South Atlantic Division; Captain Shortland hoisted his broad pennant as Commodore of the 2nd Class on board her on the following day, the "Cambrian," Captain F. Finnis, the late Commodore, leaving Gibraltar for England the same day, arriving at Plymouth on the 31st ult., where she will pay off. The first-class armoured cruiser "Hogue" paid off at Devonport on the 20th ult., her crew turning over to the new first-class armoured cruiser "Suffolk," which commissioned for the Channel Fleet on the following day. The first-class cruiser "Royal Arthur" arrived at Portsmouth from Australia, and will pay off at that port. The first-class cruiser "Blenheim" arrived on the 27th ult. at the Nore from China.

The second-class cruiser "Challenger" commissioned on the 3rd ult. at Chatham for service on the Australian Station, where she will relieve the third-class cruiser "Phœbe." The second-class cruiser "Diana," from the Mediterranean, paid off on the 12th ult. at Chatham. The second-class cruiser "Intrepid" paid off on the 21st ult. at Portsmouth, and not on the 9th ult. as reported last month. The third-class cruiser "Prometheus" paid off on the 10th ult at Devonport from the Channel Fleet.

Steam Trials.—The new torpedo-boat destroyers "Welland" and "Ribble," which have been built by Messrs. Yarrow & Co., of Poplar, have successfully carried out their steam trials. In her four hours' coal-consumption trial at full power, the "Welland" obtained a mean speed of 25·349 knots for three hours, the I.H.P. developed being 7,678, and the revolutions 343 port, 334·4 starboard. The mean results obtained on six runs over the measured course were:—Speed, 25·486 knots; I.H.P., 8,003; revolutions—starboard, 344·9; port, 338·1. The coal consumption worked out at 1·65 lbs. per I.H.P. per hour. This was followed by a four hours' full-speed trial, which proved very satisfactory. During three hours a mean speed of 26·244 knots was obtained, with the engines developing 7,766-I.H.P. The revolutions were—starboard, 346·2; port, 338·4. Almost identical results were obtained on six runs over the measured mile, the speed being 26·016 knots, and the I.H.P. 7,754. The trials of the "Welland" were brought to a conclusion with a 12 hours' coal-consumption trial, during which the coal consumption was 1·47 lbs. per I.H.P. per hour, for a mean speed of 13·505 knots.

The trials of the "Ribble" were also successful. On her four hours' coal-consumption trial the mean results for three hours were:—I.H.P., 7,634; revolutions—starboard, 339·3; port, 335; speed, 25·485 knots. During six runs over the measured course the speed was 25·328 knots, and the I.H.P. 7,733. The coal consumption was 1·57 lbs. per I.H.P. per hour. Her four hours' full-speed trial has also been carried out, when the mean results for three hours were:—I.H.P., 7,430; revolutions—starboard, 342·7; port, 336·8; speed, 25·820 knots. The speed on six runs was 25·817 knots, with the engines developing 7,696. A feature of the trials was the low coal consumption and the smooth running of the machinery.

Prize Firing Return for 1903.—The results of the prize firing in His Majesty's Fleet in 1903 have been published as a Parliamentary paper [Cd. 1,995]. In a letter addressed to the commanders-in-chief, captains, commanders, and commanding officers of His Majesty's ships and vessels, the Lords of the Admiralty note "with satisfaction the improvement in shooting with nearly all classes of guns," and it is announced that an award of medals will be promulgated shortly. In the return, a new method of tabulation has been adopted. The ships, divided into three classes, are shown in order of merit, with the stations they belong to, the number of guns and their nature, and that of the mountings, the points per type of gun, and the total points attained by each ship. The name of the best shot in the ship for each particular type of gun is also given, and the points made by him. Owing to the method adopted, it is easy to compare one ship with another, and although the actual circumstances under which the target practice took place are not given, certain factors have been considered and allotted the number of points, and various differences have been allowed for. On the whole, it must be admited that not only has the shooting sensibly improved, but the form in which the return is now made is a great advance upon those of previous years.

Thirty-two battle-ships competed, and these are classed together. In the firing from 469 heavy guns, nothing less than a 6-inch being admitted, the average made was 51·45 points. At the top of the lists is the "Majestic," flag-ship in the Channel, with a total of 80·449 points, the best shots being P. O. Gambrell and Primmer. Next to the "Majestic" is the "Albion," on the China Station, with a total of 79·562 points. The next two ships belong to the same station, and are the "Goliath," with 77·631 points, and the "Glory" with 72·752. These are excellent results, and although there is a falling off as we get lower down the list, there are no less than 19 ships with a score above the average number of points. Taken according to their stations, the China Fleet comes first, with an average of over 70 points, then the Channel Fleet, with nearly 60 points, the Mediterranean Fleet, with 50 points, and the Home Fleet, with only 30 points. It must be remembered, however, that in the Home Fleet, the guns mounted in the ships are of much older types than in other vessels. The best battle-ship in the Mediterranean was the "Bulwark," the best in the Home Fleet the "Royal Sovereign," and the three vessels which made the lowest score were the "Anson," with 14·144 points, the "Sans Pareil," with 14·094 points, and the "Benbow," with 11·659 points.

The second category is composed of the first and second-class cruisers with guns, 503 in number, ranging down to the 4·7-inch. The average was 51·63 points, which is not so satisfactory as that of the battle-ships. Twenty-two out of the 45 ships competing were above the average. At the top of the cruisers is the "Good Hope," with the magnificent total of 97·264 points, the best shots being P. O. Wellington and Lance-Sergeant McFadden, of the R.M.A. The last named is also apparently the best shot in the Navy. Second on the list is the "Charybdis," on the North American Station, with a total of 87·117 points, and there are four other vessels which exceed a total of 80 points. These are the "Flora" in the Pacific, the "Cambrian" in the South Atlantic, the "Ariadne" on the North America and West Indies, and the "Fox" in the East Indies. Of those with a score of over 70 points three are from the China Station, and one, the "Gladiator," in the Mediterranean. The ship with the worst score is

the "Rainbow," in the Cruiser Squadron, with a total of 11·711 points, but there may have been some exceptional circumstances connected with her firing, the newer ships as a rule being fairly high in the list. In the third-class are the remainder of the vessels inclusive of sloops and gun-boats, to the number of 76. The number of guns of various types was 324, and the average only 33·35 points. The shooting in some of these vessels was very bad, four gun-boats at the bottom of the list making less than ten points apiece. On the other hand, the "Bramble," on the China Station, made a total of 87·940 points, her best shot being Sergeant Ash, of the R.M.L.I. In five ships, including the "Bramble," the total was over 50 points, the others being the "Espiegle" in China, the "Landrail" on the Home Station, the "Pallas" in North America, and the "Sparrow" on the Australian Station. The variations in the scores made by these small craft needs explanation, but it is clear that the progress in straight shooting is more marked than it has been for many years, and now that the results are published in a form tending to increase emulation, there is every reason to suppose that the improvement will continue.—*Times.*

Naval Expenditure.—The following Return [129] of Naval Expenditure of this country in the years 1880, 1890, 1900, 1901, 1902, and 1903, and of the Naval Expenditure of France, Russia, Germany, and America in the same years, was issued on 12th May as a Parliamentary paper:—

Year.	Great Britain.		France.	Russia.	Germany.	America.
	Estimated.	Expended.				
	£	£	£	£	£	£
1880 ...	10,702,935	10,513,469	Information not obtainable.			
1890 ...	19,415,682†	17,042,182†	8,125,929	4,268,208	3,938,869	4,627,203
1900 ...	32,570,014†	32,131,062†	12,511,054	10,962,801*	7,472,656	13,385,574
1901 ...	33,824,515†	33,726,491†	13,107,701	11,659,766*	9,624,956	16,012,438
1902 ...	35,062,904†	34,201,994†	12,271,948	10,667,983	10,029,063	16,203,916
1903 ...	39,134,887†	39,060,887† (Estimated.)	12,538,861	12,349,567	10,252,014	16,824,058

The figures for France, Russia, Germany, and America are taken from the estimates of the respective countries, information as to actual expenditure not being available. The estimated expenditure for Great Britain is, therefore, given to enable a comparison to be made.

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*Includes one-fifth of a sum of £11,500,000, which was a special grant sanctioned in 1897 for new construction to be spread over a period of five years. The details of this expenditure have not been published.

†These figures include sums provided under the Naval Defence Act of 1889 and the Naval Works Acts, 1895-1903, inclusive. The figures relating to the years 1901-3 also include the annuities in repayment of captial expenditure under the Naval Works Acts, namely:—1901, £122,255; 1902, £297,895; 1903, £502,010.

Comparative tabular statement of the numerical strength of the Fleets of Great Britain, France, Russia, Germany, Italy, United States of America, and Japan.

Built.

—	Great Britain.	France.	Russia.	Germany.	Italy.	United States.	Japan.
Battle-ships, 1st class	49	20	16	14	13	11	6
,, 2nd ,, ...	4	9	4	4	—	1	1
,, 3rd ,, ...	2	1	1	12	3	—	—
Coast-Defence Vessels, Armoured	1	14	14	11	—	11	2
Cruisers, Armoured	28	15	8	4	5	2	8
,, Protected, 1st class ...	21	7	5	1	—	8	—
,, ,, 2nd ,, ...	49*	16	3*	8	5	15	12
,, ,, 3rd ,, ...	32*	17	2	13	13†	2	8
,, *Unprotected	8	1	3	20	1	7	9
Torpedo-Vessels...	32	16‖	9	2	14	—	1
Torpedo-Boat Destroyers ...	124	24	47	37	11	20	19
Torpedo-Boats	87	233	167	86	138	31	82
Submarine	8	26	1	1‡	1	1	—

Building.

Battle-ships, 1st class	10 2§	6	9	6 2§	5 1§	11 2§	2
Cruisers, Armoured	13 4§	6 3§	—	2 1§	1	11	—
,, Protected, 1st class ...	—	—	3	—	—	—	—
,, ,, 2nd ,, ...	2	—	—	—	—	2	1
,, ,, 3rd ,, ...	4	—	2	4 3§	—	—	—
Scouts	8	—	—	—	—	—	—
Torpedo-Boat Destroyers ...	22 14§	9 6§	14	6§	2	—	1
Torpedo-Boats	4	20 74§	—	—	8 6§	1	3
Submarines	11 10§	14 34§	13¶	—	3 2§	—	—

* Including one Partially Protected. † Including two Partially Protected.
‡ Experimental. § To be laid down 1904-1905. ‖ Including one Torpedo Depôt-Ship.
¶ It is not certain whether all these have been actually commenced.

FRANCE.—The following are the principal promotions and appointments which have been made: Rear-Admiral—R. D'Abnour to be a Member of the Council of Works and of the Consultative Committee of the Navy. Capitaine de Vaisseau—V. Y. Imhoff to "Carnot." Capitaine de Frégate—R. C. Le Nepvou de Carfort to Capitaine de Vaisseau; P. L. Dejean to "Furieux"; R. P. A. Chevalier to "Pascal."—*Journal Officiel de la République française.*

Capitaine de Vaisseau Calloch de Kérillis hoisted his broad pennant as Commodore in Command of the Newfoundland and Icelandic Fishery Squadron on the 2nd ult. on board the third-class cruiser "Lavoisier" at Lorient, and left on the 7th ult. for his destination. The first-class battle-ship "Carnot"

arrived at Brest on the 21st ult. from Toulon to relieve the "Formidable" in the Squadron of the North; having transferred some of her crew to complete the complement of the "Carnot," the "Formidable" has been placed in the second category of the Reserve.

The first-class armoured cruiser "Desaix," on her maiden voyage from Cherbourg to Toulon to join the Mediterranean Fleet, made a most satisfactory passage, accomplishing the distance without a stop in 124 hours at an average speed of 15 knots. Her twelve boilers are of the Belleville type with economisers, and steam pressure was easily maintained; the temperature of the engine-room and stokeholds 30° C. (86° Fahr.), was also satisfactory.

The second-class cruiser "D'Assas," which has been employed convoying the four destroyers "Pistolet," "Javeline," "Mousquet," and "Fronde" to Saigon, has not made a successful passage, her convoy having arrived at their destination before her. The "D'Assas" had to put into Lubang (Sumatra) for machinery defects, this being the second delay of a like nature *en route*, as she was delayed for defects at Algiers.

Le Temps says that when a cruiser was required for the purpose she was specially chosen from the Reserve at the ports as being the most ready for service and efficient, and asks if this is so, what can be thought of the general state of the Reserve. It is stated on good authority that the heat in the coal bunkers was so great that even the natives at the coaling ports refused to go down into them, and the temperature of the engine-room was as high as 48° to 50° C. (140° to 144° Fahr.). Two of the three dynamos were disabled, and drinking water had a temperature of 45° C. (133° Fahr.).

The Organisation of the Fleets for 1905.—According to the Estimates for 1905, which have been laid by M. Pelletan before the Chambers, the fleet will be organised next year as follows:—

Mediterranean.

First-class battle-ships.—"Suffren," "Iéna," "Saint Louis," "Charlemagne," "Gaulois," "Bouvet."
First-class armoured cruisers.—"Amiral Aube," "Kléber," "Desaix."
Second-class cruiser.—"Du Chayla."
Third-class cruisers.—"Galilée," "Linois."
Torpedo cruiser.—"Condor."
Destroyers.—"Carabine," "Sarbarcane," "Epieu," "Arc," "Mousqueton," "Arbalète."

All the ships will be kept fully manned during the year.

Reserve Division of the Mediterranean.

First-class battle-ships.—"Brennus," "Charles Martel."
Second-class battle-ship.—"Hoche."
Destroyer.—"La Hire."

These ships are to be kept *en disponibilité*, with correspondingly reduced crews.

Northern Squadron.

First-class battle-ships.—"Masséna," "Carnot," "Jauréguiberry."
Second-class battle-ship.—"Henri IV."
Coast-defence battle-ships.—"Bouvines," "Amiral Tréhouart."

The ships are to be fully manned for six months, and to have reduced complements for the remaining six.

First-class armoured cruisers. — "Léon Gambetta," "Condé" (fully manned for six months, and reduced complement for the other six), "Gloire," and "Dupetit Thouars" (fully manned three months, and reduced complement for three).

Third-class cruiser.—"Surcouf" (six months fully manned, and six months with reduced complement).

Destroyers.—"Bombarde," "Baliste," "Catapulte," "Dard" (fully manned during the year), "Flamberge" (9 months), "Bélier" (8 months), "Stylet" (4 months), "Tromblon" (3 months).

Reserve Division of the Squadron of the North.

First-class armoured cruisers. — "Jeanne d'Arc," "Marseillaise," "Gloire" (the two first *en disponibilité armée*, with correspondingly reduced complements for 12 months; the last-named for 6 months).

The China Squadron.

First-class armoured cruisers. — "Montcalm," "Amiral Gueydon," "Sully."

First-class cruiser.— "Chateaurenault."

Second-class cruisers.—"Descartes," "D'Assas."

Destroyers. — "Fronde," "Mousquet," "Javeline," "Pistolet," "Francisque," "Sabre."

Gun-boats.—"Argus," "Vigilante," "Olry."

Depôt-ship.—"Takiang."

All to be kept fully manned during the year.

Reserve Division of the China Squadron.

Second-class battle-ship. — "Redoutable" (12 months *en disponibilité*, with special complement).

Armoured gun-boats. — "Achéron," "Styx" (reduced complements during the year).

Despatch-vessels.—"Alouette," "Bengali."

In Reserve but not in Commission.

Cuirassé de croisière.—"Vauban."

Gun-boats.—"Décidée," "Aspic," "Surprise," "Lion," "Comète," "Vipère."

The Atlantic Division.

First-class armoured cruiser.—"Duplcix."

First-class cruiser.—"Jurien de la Gravière."

Third-class cruisers.—"Troude," "Lavoisier."

With the exception of the "Lavoisier" (6 months), the others are fully commissioned for the 12 months.

Pacific Division.

Second-class cruiser.—"Protet."

Aviso-transport.—"Merthe."

Gun-boat.— "Zélée."

All in full commission during year.

East Indian Division.

Third-class cruiser.—"Infernet."
Aviso-transport.—"Nièvre."
Gun-boat.—"Capricorne."
All in full commission during year.

Tunisian Naval Division.

Coast-defence battle-ship.—"Tempête" (12 months *en disponibilité armée*, with special complement).
Armoured gun-boat.—"Phlégéton."
Torpedo-aviso.—"Flèche" (both with reduced complement for 12 months).

Training Service.

Sea-going cadet training-ship.—"Duguay-Trouin."
Sea-going gunnery training-ship.—"Couronne."
Sea-going quartermasters' and helmsmen's training-ship.—"Calédonien."
Sea-going torpedo training-ship.—"Marceau."
Sea-going pilotage training-ships.—"Railleur," "Muntin."
All in full commission during year.

Launches.—The first-class battle-ship "Démocratie" was launched at Brest on 1st May. She is one of the six battle-ships of the 1900 programme, and was commenced on 5th April, 1902. She is not identical with the two first of the class (the "Patrie" and "République"), the armament having been altered while she was under construction, ten 194-mm. (7·6-inch) guns being substituted for the eighteen 164-mm. (6·4-inch) guns.

Her dimensions are as follows:—Length, 123 metres (403 feet); beam, 24·25 metres (79 feet); draught of water, 8·38 metres (27 feet); with a displacement of 14,927 tons. Protection is afforded by an armoured belt 280 mm. (11 inches) thick at the water-line, tapering to 9 feet 3 inches at top of belt amidships, to 7 inches forward and 5·5 inches aft, the belt being carried to a height amidships of 2·30 metres (7 feet) above the water-line. The armoured deck has a thickness of 70 mm. (2·7 inches) on the inclined and 50 mm. (2 inches) on the horizontal surfaces, and the upper deck 60 mm. (2·3 inches) armoured plates. The turrets for the heavy guns are protected by 11-inch armour; the small turrets and casemates for the secondary armament with 6-inch, while the conning tower is also 12-inch. Above the belt forward to a height of 5·20 metres (17 feet) the side will be armoured with 60-mm. (2·3-inch) plates.

The armament includes four 305-mm. (12-inch) 45-calibre guns, mounted in pairs in turrets; ten 194-mm. (7·6-inch) guns, six in turrets and four in casemates; twenty-six 47-mm. (1·8-inch) and two 37-mm. (1·4-inch) guns, and there will be five torpedo-tubes, four of which will be submerged.

The three engines are to develop 18,000-I.H.P., giving a speed of 18 knots with 110 revolutions, steam being provided by 24 Belleville boilers, and the estimated speed 18 knots. Her radius of action, with 1,850 tons of coal on board, is 8,299 miles at 10 knots, and 1,880 miles at full speed. Her complement is fixed at 42 officers and 751 men.

The new first-class armoured cruiser "Victor Hugo" was launched on the 30th March at Lorient. She was just thirteen months on the stocks, delay in her construction having been caused by the necessity of bringing all the material for her from Toulon, where it had been collected, the original intention having been to lay her down at that port. The ship

was launched with her bilge keels on, the tubes for her screw shafts in place, and her 28 Belleville boilers on board.

Her dimensions are as follows:—Length, 491 feet; beam, 70 feet 2 inches; draught, 25 feet 3 inches; with a displacement of 12,600 tons. Protection is afforded by a complete water-line belt of Harveyized steel 6·6 inches thick, tapering to 3·93 inches at the extremities, and extending to 7·5 feet above the water-line; above this is a second belt rising to the main deck, but which for a distance of about a hundred feet from the bow is carried up to the upper deck, 4·7 inches thick. There are two protective decks, starting respectively from the top and bottom of the armour belt, the lower 2·4 inches to 1·8 inches, and the upper 1·3 inches thick. The turrets for the heavy guns have 8-inch armour, with 5-inch ammunition hoists; the turrets for the secondary armament are, with their ammunition hoists, 5·5-inch, while the casemates have 4-inch armour; there is an after athwartships bulkhead 6 inches thick, while a cofferdam runs round the ship to a height of 16 feet above the water-line. The conning-tower is protected by 8-inch armour.

The armament consists of four 7·6-inch Q.F. guns, two in turrets forward and two aft; sixteen 6·4 Q.F. guns, twelve of which in pairs in upper deck turrets, three on each broadside, and the remaining four in main deck casemates; and twenty 3-pounder Q.F. guns, with five torpedo-tubes, two of which are submerged, the other three above water, one on each beam and one in the stern. There are three engines, which are to develop 27,500-I.H.P., giving a speed of 22 knots, steam being provided by 28 Belleville boilers, which are fitted with economisers. The ordinary coal capacity is 1,350 tons, but 2,100 tons can be carried, giving a radius of action of 10,000 miles at economical speed. Immediately after the launch of the "Victor Hugo," preparations were made for laying down the "Jules Michelet," another ship of the same class, and the first keel-plate was laid on 3rd April. As great progress has been made in preparing her building material, her construction should be fairly rapid, and it is hoped she will be ready for launching by next January, and completed in January, 1907. She is to be some 20 or 30 tons larger, and her engines are to develop 29,000-I.H.P.—1,500-H.P. in excess of her sisters, which should give an additional half-knot in speed.

The sea-going destroyer "Francisque" was launched at Rochefort on 2nd March, and the "Sabre" on the 15th April at the same port. Their dimensions are as follows:—Length, 184 feet; beam, 20 feet 6 inches; displacement, 303 tons; I.H.P., 6,300, to give a speed of 28 knots; they will have a crew of 4 officers and 58 men, and will be armed with one 65-mm. (2·5-inch) and six 3-pounder (1·8-inch) Q.F. guns, and two torpedo-tubes.

The submarine "Otarie," of the "Naïade" type, with a displacement of 68 tons, was launched on the 15th April, also at Rochefort.—*Le Yacht*, *Le Temps*, and *Le Moniteur de la Flotte*.

GERMANY.—The following are the principal promotions and appointments which have been made: Rear-Admirals—Fritze, von Prittwitz und Gaffron to be Vice-Admirals; Graf von Baudissin to be Inspector of the First Naval Division. Kapitäns zur See—Villers, von Holtzendorff, Scheder, Becker to be Rear-Admirals; Bachem to be Commandant of the Naval College; Mandt to Command of the Boys' Division; Friedrich to Command of 2nd Dockyard Division; Schönfelder for service at the Ministry of Marine.—*Marine Verordnungsblatt*.

The Estimates for 1904.—The Estimates for 1904 amount to 225,953,990 marks (£11,297,699 10s.), as against 209,551,124 marks (£10,477,556 4s.) voted for 1903, showing an increase of 16,402,866 marks (£820,143 6s.). The following are the principal items :—

ORDINARY PERMANENT ESTIMATES.

	Proposed 1904.			Voted 1903.	
	Marks.	£	s.	£	s.
Imperial Ministry of Marine and Naval Cabinet	1,599,640	= (79,982	0)	78,519	0
Naval Headquarter Staff	204,280	(10,214	0)	9,522	5
Observatories, etc.	349,514	(17,475	14)	16,970	5
Station Accounts Department	434,520	(21,726	0)	20,632	5
Legal Department	124,420	(6,221	0)	5,246	0
Chaplains' Department and Garrison Schools	111,215	(5,560	0)	5,235	12
Pay of Officers and Men	22,329,517	(1,116,475	17)	1,045,183	9
Maintenance of Fleet in Commission	25,971,797	(1,298,589	0)	1,197,581	1
Allowances for Officers and Men	1,739,379	(86,968	0)	74,973	14
Clothing	377,575	(18,878	15)	17,885	11
Barrack and Garrison Administration, etc. ...	1,332,969	(66,648	9)	60,243	8
Lodging Allowance	3,437,998	(171,899	18)	160,653	18
Medical Department	1,647,361	(82,368	1)	76,289	17
Travelling, Transport, and Freight Charges ...	3,375,000	(168,750	0)	143,540	15
Training Establishments	364,278	(18,213	18)	17,298	11
Maintenance of the Fleet and Dockyards ...	25,272,315	(1,263,615	15)	1,203,392	14
Ordnance, Arms, and Fortification	8,463,482	(423,174	2)	405,354	14
Accountant-General's Department	700,034	(35,001	14)	32,817	11
Pilotage and Surveying	647,219	(32,360	19)	29,437	8
Miscellaneous Expenses	1,255,084	(62,754	4)	59,098	14
Administration of Kiau-Chau Protectorate ...	90,023	(4,501	3)	3,591	2
Total	99,827,620	(4,991,381	0)	4,663,462	14

SPECIAL ORDINARY ESTIMATES.

Shipbuilding Programme for 1904.

For the construction of the following ships :—

	Marks.	£	s.
The first-class battle-ship "Braunschweig" (*H*), 4th and final Vote	2,350,000	= (117,500	0)
" " " "Elsass" (*J*), 4th and final Vote	2,350,000	(117,500	0)
" " " "Preussen" (*K*), 3rd Vote ...	4,650,000	(237,500	0)
" " " "Hessen" (*L*), 3rd Vote ...	4,650,000	(237,500	0)
" " " "M" 2nd Vote	6,050,000	(302,500	0)
" " " "N," 2nd Vote	6,050,000	(302,500	0)
" " " "O," 1st Vote	2,600,000	(130,000	0)
" " " "P," "	2,600,000	(130,000	0)
The first-class armoured cruiser "Roon" (Ersatz "Kaiser"), 3rd and final Vote ...	5,500,000	(275,000	0)
" " " Ersatz "Deutschland," 2nd Vote	5,030,000	(251,500	0)
" " " "C," 1st Vote	3,200,000	(160,000	0)
The third-class cruiser "Hamburg" (*K*), 3rd and final Vote	1,090,000	(54,500	0)
" " " "Bremen" (*L*), 3rd and final Vote	1,090,000	(54,500	0)
" " " "Berlin" (Ersatz "Zieten") 3rd and final Vote...	1,090,000	(54,500	0)
" " " "M," 2nd Vote	2,435,000	(121,750	0)
" " " Ersatz "Merkur," 2nd Vote ...	2,435,000	(121,750	0)
" " " "N," 1st Vote...	1,225,000	(61,250	0)
" " " Ersatz "Alexandrine," 1st Vote ...	1,225,000	(61,250	0)
" " " Ersatz "Meteor" 1st Vote	1,225,000	(61,250	0)

	Marks.	£ s.
For the re-construction of the Ships of the "Brandenburg" class, 3rd and final Vote	550,000	(27,500 0)
For the fitting of Cooling and Ventilating Apparatus for Ships' Magazines, 3rd and final Vote	2,720,000	(136,000 0)
For the thorough overhaul and repair of the first-class cruiser "Kaiserin Augusta," 2nd and final Vote ...	1,500,000	(75,000 0)
For the thorough overhaul and repair of the second-class cruiser "Irene," 2nd and final Vote	1,200,000	(60,000 0)
For the construction of a sea-going Dredger, 2nd and final Vote	700,000	(35,000 0)
" " Gun-boat "C," 1st Vote	800,000	(40,000 0)
" " a Tender for the Gun-Trial and School Ship	450,000	(22,500 0)
" " a Surveying Vessel	750,000	(37,500 0)
" " a Division of Torpedo-boats, 2nd and final Vote...	2,440,000	(122,000 0)
" " " " 1st Vote ...	3,100,000	(155,000 0)
Total	71,055,000	(3,552,750 0)
For the Gun and Torpedo Armaments of New Ships ...	29,316,000	(1,465,800 0)
Miscellaneous Expenditure: Dockyards, etc.	7,185,370	(359,268 10)
	107,556,370	(5,377,818 10)
From which has to be deducted, credited in the Extra-ordinary Estimates	32,115,000	(1,605,750 0)
Leaving Total...	75,441,370	(3,772,068 10)

Summary.

	1904. Marks.	£ s.	1903. £ s.	Increase, 1904. £ s.
Ordinary Permanent Estimates	99,827,620	=(4,991,381 0)	4,663,462 14	(+327,918 6)
Shipbuilding, Armament, etc.	75,441,370	(3,772,068 10)	3,455,343 10	(+316,725 0)
Extraordinary Expenditure...	50,685,000	(2,534,250 0)	2,358,750 0	(+175,500 0)
Total	225,953,990	(11,297,699 10)	10,477,556 4	(+820,143 6)

The Personnel of the Fleet.—The following are the numbers of the officers of different ranks on the Active List of the Fleet:—5 Admirals, 7 Vice-Admirals, 17 Rear-Admirals, 63 Captains, 137 Frigate and Corvette Captains, 277 Captain-Lieutenants, 772 Lieutenants, 368 Midshipmen, and 150 Cadets. There are, further, 1 retired Rear-Admiral, 12 retired Captains, 20 retired Frigate and Corvette Captains, and 1 retired Lieutenant employed on special duties, while 37 Captain-Lieutenants and 62 Lieutenants are employed in ordnance and torpedo duties in the various dockyards and coast stations. The total number of commissioned officers of the military branch actively employed is thus 1,278, showing an increase of 140 over last year, viz.:—1 Vice-Admiral, 1 Rear-Admiral, 3 Captains, 14 Frigate and Corvette Captains, 36 Captain-Lieutenants, and 85 Lieutenants.

The Marine Battalions have as their staff:—1 Inspector of Marine Infantry, 2 Battalion Commanders, 15 Captains, 10 First Lieutenants, and 22 Lieutenants, showing an increase of 2 Captains and 4 Lieutenants over last year. The Engineering Department consists of:—6 Chief Engineers, 35 Staff Engineers, 73 Engineers first class, and 109 Engineers, being an increase of 1 Chief Engineer, 2 Staff Engineers, 5 Engineers first class, and 8 Engineers.

The Medical Department consists of :—1 Medical Director-General (with the rank of Rear-Admiral), 3 Inspectors-General, 37 Fleet-Surgeons, 72 Staff-Surgeons, 42 Surgeons, and 42 Assistant-Surgeons, showing an increase of 3 Fleet-Surgeons, 4 Staff-Surgeons, 2 Surgeons, and 2 Assistant-Surgeons.

In the Accountant Department are :—22 Staff-Paymasters, 142 Senior Paymasters and Paymasters, showing an increase of 6 Staff-Paymasters and 13 Senior Paymasters and Paymasters.

The Seamen Divisions number : — 88 Chief Warrant Officers, 165 Warrant Officers, and 13,923 Petty Officers and men, with 1,100 boys, a total of 15,023, showing an increase of 15 Chief Warrant Officers, 15 Warrant Officers, and 770 Petty Officers and men, the number of boys remaining the same.

The Dockyard Divisions number :—276 Chief Warrant Officers, 553 Warrant Officers, and 9,160 Petty Officers and men, of whom 726 Chief and Warrant Officers, with 7,173 Petty Officers and men form the engine-room *personnel* of the Fleet, which shows an increase of 59 Chief and Warrant Officers and 852 Petty Officers and men over last year, with a total increase in the Divisions of 68 Chief and Warrant Officers and 971 Petty Officers and men.

The Torpedo Divisions number :—79 Chief Warrant Officers, 160 Warrant Officers, and 4,024 Petty Officers and men, of whom 47 Chief and Warrant Officers and 1,889 Petty Officers and men are of the seamen class, while 194 Chief and Warrant Officers and 2,135 Petty Officers and men are of the engineering branch ; there is an increase in the Divisions of 3 Chief Warrant and 6 Warrant Officers, with 171 Petty Officers and men of the engineering branch, and of 170 Petty Officers and men of the seamen branch, or a total increase in both branches of 9 Chief and Warrant Officers and 291 men.

The Seamen-Artillery Division numbers :—11 Chief Warrant Officers, 18 Warrant Officers, and 2,422 Petty Officers and men, showing an increase of 64 Petty Officers and men.

The Marine Infantry numbers :—191 Non-Commissioned Officers and 1,038 men—a similar strength to last year.

The Sick Bay Staff consists of :—310 Petty Officers and men of various grades, an increase of 30 over the previous year ; and there are 227 ships' stewards and assistants, an increase of 13.

The total strength of the active *personnel* of the Navy stands at 38,025, viz. :—1,901 Officers, exclusive of Midshipmen and Cadets, and 36,124 Warrant Officers, Petty Officers, men, and boys, being an increase of 179 officers and 2,161 men over last year.

The Matériel of the Fleet.—The *matériel* of the Fleet, including ships under construction, is made up as follows :—Battle-ships, 35, to be increased to 38, in accordance with the Navy Act of 1900. Of these there are 14 first-class battle-ships completed, 4 in different stages approaching completion, two to be launched this year (1 of these was launched on 28th May), and 2 others to be laid down during the year ; 5 third-class battle-ships, and 8 fourth-class ; these last are rated as coast-defence ships, and will, with the third-class ships, be in due course replaced by first-class vessels.

Large cruisers, 13, to be increased to 14. Of these there are 4 first-class armoured cruisers completed, two under construction, and 1 to be laid down. The remaining 6 are protected vessels.

Small cruisers, 35, to be increased to 38. Of these there are 27 completed, 3 approaching completion, two under construction, and 3 to be laid down.

There are 7 first-class gun-boats and four river gun-boats; three of the latter are completed and one completing.

The torpedo flotilla consists of 47 of what are practically destroyers, all, with the exception of three having displacements of from 320 to 380 tons, with a speed of from 25 to 30 knots; there are, in addition, 47 smaller sea-going torpedo-boats, and some 38 second-class boats for harbour and coast defence. Six destroyers are under construction, and six more are to be laid down this year.

The Training Squadron for Cadets and Boys of:—6 sea-going cadet and boys' school-frigates; and there are 7 gunnery training-ships, 1 torpedo school ship, and 2 submarine mine training-ships.

The Special Service Ships are:—2 Imperial yachts, 3 surveying-ships, 1 stationaire at Constantinople, and a torpedo depôt ship with her tender. —*Etat für die Verwaltung der Kaiserlichen Marine auf das Rechnungsjahr 1904.*

Launches.—The new first-class battle-ship "Lothringen" (ex-M.) was launched from the Schichau Yard, Dantzig, on May 27th, in the presence of the Kaiser, Prince Henry of Prussia, and a distinguished assembly, the naming ceremony being performed by the Countess Zeppelin. As the ship left the ways a salute of 24 guns was fired.

Her dimensions are as follows:—Length, 400 feet 3 inches between perpendiculars, 430 feet over all; beam, 73 feet 6 inches; displacement, 13,208 tons, with a mean draught of 25 feet 8 inches. The triple-expansion engines, to drive three screws, are to develop 16,000-I.H.P., to give a speed of 18 knots. There are two sets of boilers, six cylindrical, and eight water-tube of the Schultz type. The normal coal supply will be 1,000 tons, but 1,500 can be carried on an emergency, with 200 tons of oil.

Protection is afforded by a complete armour belt of Krupp steel, 9 inches thick, tapering to 4 inches at the extremities; above this is another belt 240 feet long of 6-inch steel, and a central battery 180 feet long above this again, also protected by 6-inch armour. The armoured deck is 1·5 inches thick on the flat, and 3 inches on the slopes: the transverse bulkheads are 6 inches thick. The barbettes for the heavy guns, with their hoods, are 11 inches thick; the small turrets 7 inches; while the fore conning-tower is 12 inches, and the after one 5·5 inches. The total weight of armour is 4,200 tons.

The armament will consist of four 40-calibre 11-inch guns, in pairs in the barbettes, one forward and one aft; fourteen 40-calibre 6·7-inch Q.F. guns, four in turrets on the upper deck and ten in the casemated battery on the main deck, with twelve 3·4-inch and twelve 1-pounder Q.F. guns, and six torpedo-tubes, one submerged in the stem, two submerged on each broadside, and one above water in the stern.

The new first-class armoured cruiser "York" (Ersatz "Deutschland") was launched on the 14th ult. from the yard of Messrs. Blohm and Voss, at Hamburg, the keel-plate having been laid on the 25th April, 1903. She is somewhat similar to the "Prinz Heinrich" class, but is of an improved type. The hull is of steel, without sheathing. She will have two military masts, each carrying one top, and two funnels. The bow is high,

and the superstructure extends from the stem to a point just forward of the after turret. The complement will be 528, or, as a flag-ship, 571.

Her principal dimensions are :—Length, 403 feet 6 inches; beam, 65 feet 7 inches; mean draught, 24·3 feet; displacement, about 9,550 tons. She will have three 4-cylinder triple-expansion engines, designed to develop 19,000-I.H.P., and give a speed of 21 knots, steam being supplied by sixteen Dürr water-tube boilers. The coal supply, at load draught, will be 1,000 tons, with a total capacity of 1,500 tons.

Protection is afforded by a complete belt of Krupp steel, 7·5 feet wide, 3·9 inches thick amidships, and 3·2 inches at the ends. Above this, and extending up to the gun deck for a length of 165 feet amidships, the side is covered with 6-inch armour; and above this again is the casemate for the 5·9-inch guns, protected by 4-inch armour. The protective deck, behind the belt and sloping down at the sides to meet the lower edge of the latter, is 2·8 inches thick on the slopes and 1·6 inches on the flat. The flat armour deck over the upper side armour, outside the casemate, is 1·2 inches thick; and the deck over the casemates is 1·4 inches. The turrets for the 8·27-inch guns are 5·9 inches thick, and rest on barbette towers of the same thickness. The armour of the 5·9-inch turrets is 3·9 inches thick in front and 3·2 inches in rear, and of the 5·9-inch casemates 3·9 inches. The forward conning tower is 16 inches thick, and the after one 3·2 inches of special steel. The ammunition tubes for the 8·27-inch guns are 3·9 to 3·2 inches thick; for the 5·9-inch turrets, 3·2 inches.

Her armament will consist of four 8·27-inch Krupp guns in pairs in turrets forward and aft, the forward turret being on the superstructure (or upper) deck, and the after one on the main deck. These turrets are to be worked by hydraulic power. Ten 5·9-inch guns—three each side in a long casemate on the gun deck, forward pair firing directly ahead, and after pair directly astern; and four in four turrets, two each side, over the casemates for the other 5·9-inch guns. The upper works are thrown inboard to permit bow and stern fire from these turrets. There are twelve 3·47-inch guns in the superstructure and on the upper deck and bridges, and ten machine guns, with five submerged torpedo-tubes, one in the stem, and one on each beam, and one above-water torpedo-tube in the stern on the berth deck, protected by armour.

The ship is to be completed ready for turning over to the authorities by the beginning of 1906.

Two third-class cruisers of the improved "Arcona" class have recently been launched, the "Lubeck" on 26th March from the Vulcan Yard at Stettin, and the "München" on the 30th ult. from the Weser Yard, Bremen. The dimensions of these vessels are as follows :—Length, 361 feet; beam, 40 feet 4 inches, with a draught of 16 feet 5 inches on a displacement of 3,200 tons. The two triple-expansion engines are to develop 10,000-I.H.P., giving a speed of 22 knots; steam being provided by ten Schultz water-tube boilers. The coal stowage will be 800 tons, giving a radius of action of 5,000 miles at 10 knots. There is an armoured deck 1 inch thick on the flat and 2 inches on the slopes, with a 3-inch conning-tower. The armament will consist of ten 4·1-inch and twelve 1·4-inch Q.F. guns, with two submerged torpedo-tubes for 18-inch torpedoes.

Steam Trials.—The new third-class cruiser "Arcona," built by the Weser Yard, Bremen, has completed her trials successfully. At the 24 hours' coal-consumption trial, with the engines developing 1,200-I.H.P.,

the coal consumption per I.H.P. per hour was 0·897 kg. (1·97 lbs.); at the second 24 hours' run, with the engines developing 5,727-I.H.P., and making 145·7 revolutions, the coal consumption was 0·9 kg. (1·98 lbs.). At the 6 hours' full-speed trial the engines developed 8,587-I.H.P., 587 in excess of the contract, making 163·7 revolutions, and giving a speed of 21 knots; the air pressure being 38·5 mm. (1·5 inches). The ship is fitted with water-tube boilers of the Schultz type.

The trials of the "Hamburg," the first of the improved "Arcona" class to be completed, have also been completed successfully. The ship was built by the Vulcan Yard, Stettin, and has been finished within 16 months of her laying down. At her 24 hours' coal-consumption trial at 7,000-I.H.P., the engines actually developed 7,244-I.H.P., making 124 revolutions, with a coal consumption of 0·827 kg. (1·82 lbs.) per I.H.P. per hour, the air pressure being 19 mm. (·74 inch). At the 6 hours' full-speed trials under forced draught the engines developed 10,746-I.H.P. (746 in excess of the contract), with an air pressure of 40 mm. (1·57 inches), the mean revolutions being 141, and the mean speed 22 knots. During four runs on the measured mile a speed of 22·5 knots was attained, the engines developing 11,889-I.H.P. (1,889 over the contract), and making 145·4 revolutions. During a further run at full speed in deep water, a speed of 23·1 knots was attained, the engines developing 11,582-I.H.P., with an air pressure of 43 mm. (1·69 inches), and making 147 revolutions. The ship has ten small-tubed water-tube boilers of the Schultz type, and both engines and boilers worked without a hitch.

Training Ships. — The work of refitting the three training frigates "Stosch," "Stein," and "Moltke," in preparation for the usual annual cruise, was completed at Kiel in the early part of May, and the ships received the complement of cadets and boys to the number of 600, there being 50 cadets and 150 boys on board each vessel, with 5 students for the Constructor's Department. These latter serve as one-year volunteer seamen, but go through the same course of instruction on board as the cadets; the practical course includes seamanship, navigation, gunnery, and steam; the theoretical, in addition to special subjects, mathematics, natural history, service economy, and English. The cadets and boys remain on board until the end of next March. The ships have been making a preliminary cruise in the Baltic, but will be back at Kiel for the Kiel week, after which they will leave for an eight months' cruise to the West Indies and Mediterranean, visiting, as usual when they first leave, one or two of the Scandinavian ports. — *Neue Preussische Kreuz-Zeitung*, *Marine Rundschau*, and *Ueberall*.

UNITED STATES.—*Accident to Guns of "Iowa."*—Following is a record of the findings of a board of investigation to inquire into the circumstances attending the accidents on February 5th, 1904, to 8-inch guns Nos. 61 and 62, on board the U.S.S. "Iowa." Convened by order of the Chief of Bureau of Navigation.

Navy Department. Washington, D.C., March 28th, 1904.

Sir,—The board appointed by your order of February 18th, 1904, to make an investigation of all the circumstances attending the accidents on February 5th, 1904, to the 8-inch guns Nos. 61 and 62 on board the U.S.S. "Iowa," and of the causes which led thereto, as far as they can be ascertained, has the honour to submit the following. We find the following facts established :—

1. On the morning of February 4th, 1904, while the battery of the U.S.S. "Iowa" was being tested by the Board of Inspection, the muzzles of both 8-inch guns (Nos. 61 and 62) in the starboard forward turret were blown off, the fractures being in the vicinity of the junction of E and F hoops.

2. All the usual precautions were taken before firing. Both the officer of the division and the loader had looked through the bore before the projectile was placed in the gun and found all correct. The projectiles in both cases were blind shell of forged steel. The charges were of smokeless powder, Index 220, the history and description being given herewith. The sections of cartridges were placed in the chamber tie first, and there is every reason to believe the ignition grains were in their proper place intact. The turret was trained on the starboard beam; the wind fresh on starboard quarter and the temperature 28° F. The sights were set at 1,100 yards, and the guns aimed at the horizon. The primers used were combination B.L.R. primers, and were fired by the electrical firing system. The left gun (No. 62) was fired at about 10.45 a.m., the muzzle blowing off between hoops E and F. The order was given to fire the right gun, but a miss-fire due to faulty connection in firing circuit occurred. The remaining 8-inch guns were therefore first fired, and the right gun (No. 61) actually fired about twenty minutes after the left gun. The muzzle of this gun also blew off, the fracture occurring near the junction of E and F hoops. In neither case was there any evidence of extraordinary pressure, inside the turret. The recoils were apparently normal; there were no hang-fires, no escape of gas; the breech plugs opened with ease; the gas check pads and rings showed no signs of injury; the primers were not distorted, and the locks were uninjured. The evidence is that the right gun was not injured by the bursting of the left gun; although not closely examined, the paint on the gun appeared to be intact.

3. With gun No. 62, the fracture of the tube was from one to four inches inside the outer end of hoop E; this end of the hoop was slightly expanded. The outer end of the tube and all of F hoop went overboard, and there is no evidence to show whether F hoop was fractured or entire. The fracture showed bright in all places, except one spot about two inches long, which showed a yellow streak; this by some witnesses was attributed to quick rusting from a plash of salt water. The fracture showed a fine granular surface, and there was no evidence of blow holes, and spots or weakness of metal.

4. With gun No. 61, the fracture of the tube extended from about two inches outside, to about two inches inside the junction of hoops E and F. Hoop F was evidently fractured, as two pieces were picked up on board. The forward end of E hoop was expanded somewhat more than in gun No. 61. The general character of the surface of the fracture was the same, except that no spot was found.

5. No injury resulted to any person on board, and no damage to the vessel or her equipment, except to the guns themselves, and a slight injury to a boat temporarily stowed on the starboard side of the quarter deck; this latter from a fragment of the F hoop when the second gun burst.

6. There were picked up after the accident, a number of thin unburned strips of the web of the powder grain, indicating that the powder had burned normally in the gun up to the point of rupture. These strips were nearly the length of the grain, and were triangular, all

concave on two sides and convex the third, showing they came from the outer row of webs, as the inner row would be concave on all three sides. They showed the grain 97·2 per cent. (weight) burned and that the burning from periphery was practically at the same rate as from perforations.

HISTORY OF THE GUNS.

7. The guns were 8-inch (·35-calibre) Mark IV., No. 61 (right) and 62 (left) located in the starboard forward turret of the U.S.S. "Iowa."

8. The records show that No. 61 burst on the 108th round, and No. 62 on the 91st. As near as can be ascertained, also each had been fired from 12 to 15 times with smokeless powder, presumably with full charges.

9. The guns were both star gauged and inspected July 21st and 22nd, 1903, at the Naval Gun factory, and found in good condition.

10. Between this time and the date of firing, the shots which ruptured the guns, no firing had taken place. The guns burst on the first five of the series.

11. The forgings were obtained from the Midvale Steel Company, under contract of August, 1893.

12. The records show that on the results of the physical and chemical tests of specimens from the forgings at the works, the forgings were all provisionally accepted, except D hoop N-6616, which had one test bar from one end fall about 700 lbs. per square inch below the elastic limit given by the specifications, and which defect was waived by the Bureau of Ordnance.

13. It is further shown by the records that subsequently, when the forgings were being machined at the gun factory, defects developed, the defects being described as numerous small "breaks" in the continuity of the metal and also minute "sand and slag spots"; that the forgings were thereupon rejected by the factory; that upon the protest of the Midvale Steel Company, a board of officers was ordered in accordance with a clause in the contract.

14. That this board recommended the rejection of certain of the forgings, including the E hoops of guns Nos. 61 and 62, and the F hoop of No. 62; and that the board recommended the rough chambering of certain tubes including the tube of gun No. 61.

15. That the manufacturers again protested by letter and through their attorneys, setting forth statements intended to show "that the state of the art was such that such flaws will exist, as shown by forgings of other manufacturers; that gun forgings for Army guns showed the same defects; that a 4-inch gun built up of similar forgings were assembled, finished, and proved with excessive pressure with brown powder, and showed only a slight enlargement of the chambers after star-gauging."

16. That thereupon another board was ordered to examine and report on the forgings; with report as follows: "None of the 8-inch forgings presented for our inspection are as yet machined to finished dimensions. The defects that are referred to as existing are common to all in a larger or smaller degree, but neither the sand nor the slag spots nor the breaks are serious enough in the present stage to cause us to recommend their rejection. We therefore recommend the provisional acceptance of the following 8-inch forgings." That the list which follows includes the tubes of guns Nos. 61 and 62; the E hoop of gun No. 62, and the F hoop of gun No. 62, and also the forgings of Nos. 63 and 64, which

are in the port forward turret, and which were fired the same day and with the same charge, and did not burst.

17. That the Bureau of Ordnance, conceding that the question was largely a matter of opinion, approved the action of the board and recommended the Department's approval, and the acceptance of the forgings at a reduction of 10 per cent. from contract price.

18. That the Department approved the recommendation except the reduction, and ordered the acceptance of the forgings at the contract price.

19. That the guns were regularly proved with brown powder.

20. That the inspection and star-gauging during manufacture and after proof show nothing unusual.

21. That test specimens from the tube of Gun No. 61 after the accident gave the following results :—

Tensile Strength per Square Inch.

——	On Original Cross Section.	On Final Cross Section.	Elongation After Fracture.	Ch. of Area. After Fracture.
	lbs.	lbs.	Per cent.	Per cent.
L inner	80·478	46,579	31·15	62·43
L outer	77,617	43,290	31·67	61·81
T inner	79,043	41,759	27·76	55·61
T outer	80,722	44,309	26·73	46·71

Speed one inch in three minutes.

These results indicate no material change in the physical characteristics since the acceptance tests.

RECORD OF THE POWDER.

22. The powder used in these guns was manufactured by the International Powder Company, in 1902, and after tests was accepted. It was assigned a charge of 61 lbs., giving a chamber pressure of 13·32 tons per square inch, and a muzzle velocity of 2,298 f.s., and was stored at Iona Island magazine, September, 1902, as Index S.P., No. 220. While stored at this magazine, it was subjected to the usual tests. In July, 1903, the powder was redried, and a charge of 58¼ lbs. was assigned, giving a velocity of 2,294 f.s., with a pressure of 13·55 tons. The reduced charge of 54 lbs. gave a velocity of 2,100 f.s., with a pressure of eleven tons.

23. At the time of the accident, this powder had been on board the "Iowa" about one month, and was stored in airtight boxes, the temperature of the magazine during this time being normal and ranging from 50° to 75° F.

24. After the accident, the 227 remaining charges were removed and carefully examined by a board. All charges were found to be of correct weight and properly done up, with the ignition charges in no case disturbed. The report of this board is attached, marked F.

25. The powder was tested at the proving ground, Par. 17, subsequent to the accident, with the weight of charge of 58¼ lbs., and gave a pressure of 14 tons with 2,302 f.s. The history and action of this powder have, in all respects, been found to be normal, and there is no evidence to show that the particular charges with which the guns were loaded should cause any unusual results.

THE DESIGN OF THE GUNS.

26. The guns were designed for use with brown powder, M.V. 2,100 f.s., maximum pressure 15 tons.

27. Since the adoption of smokeless powder, the M.V. has been fixed at 2,300 f.s., with maximum pressure not to exceed 14 tons. The powder used in the guns at the time of the accident, at its acceptance test, gave 13·55 tons for the required velocity. The increase of velocity from 2,100 to 2,300 f.s. increased the work done in the gun 20 per cent.; as at the same time the maximum breech pressure was reduced from 15 to 13½ tons, the work done in the forward part of the gun was necessarily increased in a greater ratio than this, with the accompanying increased chase pressure required to produce this result.

28. A tracing is attached to the record of the proceedings of the board showing :—

a. The strength curve of the gun (within the elastic limit). In the calculations for this curve, the contract physical requirements to have been used, viz., elastic strength of tube, 36,000 lbs. per square inch; elastic strength of jacket, 38,000 lbs. per square inch; elastic strength of hoops, 50,000 lbs. per square inch.

The curve, therefore, shows the minimum strength for guns from forgings under this contract. The qualities as shown by the official tests were usually in excess of requirements. In the cases of tubes and hoops used in guns Nos. 61 and 62, if the results of the tests are used in place of the contract requirements, the elastic strength of the guns at the forward end of the E hoop will be 2·1 tons greater than shown by the curve.

b. The pressure curve for smokeless powder, with muzzle velocity 2,300 f.s., maximum pressure 14 tons. This curve is derived from the results of French experiments with powder similar to our own so far as can be ascertained.

29. Using Sarau's well-known formula for determining pressures in a closed cylinder, and deriving the value of f the powder force, and α the oc volume, from the results given by M. Vielle in his "Study of the Mode of Combustion of Explosives," the following results are obtained: Assuming that the entire powder charge was burned without any loss of heat, in the space from the bottom of the bore to the front end of the E hoop, the pressure produced thereby would be 8·95 tons per square inch; to the front end of F hoop, 7·5 tons per square inch. As in practice heat is lost by conduction, and fully 16 per cent. is converted into the energy of the projectile, these pressures are considerably greater than could be produced at the points named by the given charge under normal condition, dependent, however, on the assumption that the constants determined from the French powders are applicable to our own.

30. From the strength curve of the gun, the elastic strengths at the points named are 10½, and 8 tons respectively. It must be borne in mind, however, that these strengths are for static pressures, and that the stress in the bore is applied suddenly in the nature of a blow, as the base of the projectile passes. The wave of strains passing rapidly along the bore of the gun would probably be considerably greater than that caused by the static pressure of the powder gases.

31. Certain theoretical considerations indicate that the present form of powder grain is favourable to irregular ignition, which would tend to produce wave pressure. Among the more important of these are: the

irregular packing necessary with the absence of any free passage for the flame of ignition without repeated impacts; the increasing burning surface, and the uncertainty in regard to action of gases in the small perforations. It would seem that the pressure required to start the projectile should insure the ignition of all portions of the charge while in the chamber. There is insufficient data available to determine this question.

32. The board has considered the theory of wave pressures advanced to account for the bursting of these guns, but there is no evidence to show that the accidents were due to a cause of this character.

33. There have been seven accidents to the muzzle of guns in the U.S. naval service in six different calibres, four with smokeless and three with brown powder. In the only two where pressures and velocities were actually measured, one with smokeless and one with brown powder, the breech pressures were, in each case, extremely low (less than 10½ tons), for the velocity obtained, this indicating undue pressure toward the muzzle. In the remaining cases what data there are indicate the breech pressures were low.

34. In consideration of the above facts the board has reached the following conclusions :—

a. The 8-inch guns of the "Iowa," Nos. 61 and 62, so far as their material is concerned, were as strong as they were designed to be. So far as their design is concerned they were sufficiently strong and safe for a muzzle velocity of 2,100 f.s., produced with a maximum breech pressure of 15 tons per square inch.

b. The fracture of these guns did not result from any weakening from previous firing; from the premature bursting of shells in the bore, or from excessive pressures resulting from abnormal action of the powder charge.

c. The increase of muzzle velocity from 2,100 f.s. to 2,300 f.s., while at the same time the maximum breech pressures was decreased from 15 to 13·55 tons, the board assumes, reduced the margin of safety along the chase too much. With the small margin of safety remaining, any unusual conditions tending to throw greater strain on the chase of the gun, would be sufficient to account for the accident. Just what these conditions were in the case of the "Iowa's" guns, the board has been unable to determine; it was probably a combination in one direction of small variations from the normal. The assumption that the margin of safety has been reduced too much should be verified by experiment.

35. It is recommended that when the muzzle velocity is established or changed, a minimum breech pressure, dependent on the design of the gun, to be produced by the charge required to give the velocity, be fixed, in addition to the maximum.

36. That more extended experiments be made to determine the advantages and disadvantages of the present grain powder in comparison with other shapes, and to determine the accuracy of the pressure curves as applied to the powders in actual use. Very respectfully,

(Signed) J. H. DAYTON, Captain, U.S.N.
F. F. FLETCHER, Commander, U.S.N.
A. C. DIEFFENBACH, Lieut., U.S.N.

The Secretary of the Navy (Chief of the Bureau of Navigation).

—*U.S. Army and Navy Journal.*

In a memorandum submitted to the Secretary of the Navy, Admiral O'Neil, Chief of the Bureau of Ordnance, says :—

"The powder used in the "Iowa's" 8-inch guns which were injured in her starboard forward turret was manufactured by the International Smokeless Powder Company in August, 1902. The weight of charge originally fixed was 61 pounds, which, with a chamber pressure of 13·3 tons per square inch, gave a muzzle velocity of 2,297 foot seconds (2,300 foot seconds desired). As this powder was delivered in the old style of packing boxes, the bureau had all of this index (220) redried in September, 1903, when it was re-packed in air-tight boxes, and a new weight of charge was fixed at 58¼ pounds, which, with a chamber pressure of 13·55 tons per square inch gave a muzzle velocity of 2,294 foot seconds (2,300 foot seconds desired). It appears that this same powder was used in the guns of the port forward turret of the "Iowa" on the same day the accident occurred with no unusual results. The injured guns were No. 61, which has been fired 107 times, and No. 62, which has been fired 90 times. They were manufactured at the Washington Navy Yard in 1896, and were of the same type as those on the "Indiana," "Massachusetts," "Oregon," "Kearsarge," "Kentucky," "Baltimore," "Olympia," "Brooklyn," "Chicago," and "New York." The bureau is unable at this time to assign any cause for the accident, but is of the opinion that it must be sought for in the powder and not in the gun. A gun of this type has been in use at the proving ground for some time, and has been fired about 325 times, many rounds being with much higher pressure than those given by the service charges. Samples of the "Iowa's" powder will be sent to the proving ground for further test and examination, and a Board of officers will be ordered to examine and report on the exact condition of the ammunition supplied to the vessel, to determine, if possible, the cause which led to the accident. The "Iowa's" 8-inch guns were designed for a working chamber pressure of 15 tons per squore inch, and have frequently been fired at the proving ground with pressures up to 19 tons, so that 13·5 tons, for which the powder charges were fixed, should leave a large factor of safety, unless the powder gave very erratic and abnormal results, such as have never been observed in an experience of several years with powder of this kind."

Concerning the peculiarities of the U.S. smokeless powder, an interesting statement has been made by Lieut.-Commander John B. Bernadou, U.S.N., whose intelligent and thorough study of this special subject enables him to speak with authority :—

"The determination of pressure," he said, "developed at the instant of firing is exceedingly difficult. Thus far we have been content to gauge it by measuring the amount of compression that a small disc of copper placed inside the gun near the breech is subjected to on firing. This is something like trying to measure the weight of a locomotive from the effect on a copper cent placed on a railroad track. The French have handled this problem more boldly, and have gone so far as to apply to the gun methods analogous to those used for the steam engine in determining the effect of the steam in the cylinder; that is, they take an indicator diagram on discharge of the gun, pretty much as an indicator diagram on discharge is taken for a steam engine. A small rod of steel is carried through the wall of the gun. Its inner end is in contact with the copper that is to be compressed. Its outer end carries a sharp stilus, which is placed in contact with a rapidly revolving drum covered with lamp black.

At the instant of firing, the rod is driven backward so that its outer point describes a curve on the lamp black surface.

"The study of this curve very clearly shows how the powder gas acted in the gun. It shows, first, that when the charge is thrown into the chamber in a heap, instead of being uniformly distributed, the powder acts irregularly. That is, instead of a smooth curve on the lamp black of a covered cylinder, a more or less jagged line is obtained. This is interpreted into a fact that when the powder is regularly placed in the gun the shell leaves the muzzle with a smooth swing as a rocket sails into the air; while when the powder is placed in the gun irregularly there occurs a 'bump-bump-bump,' and the gun is subjected to violent blows before the projectile reaches the muzzle.

"The question then becomes how to distribute the powder regularly in the powder chamber of the gun before firing, so that smooth and uniform results may be obtained. This brings us directly to the form of the powder grain. In all foreign countries where powders like ours are employed, these powders are manufactured in the form of long strips or ribbons, which are tied together like a bundle of faggots and placed in the gun in such a manner that each strip occupies a regular position.

"We in the United States manufacture our powder to-day in the form resembling that of hickory nuts, which are dumped into a bag, which is then tied with a string, and the whole is tossed into the gun before firing. This is a step backward from the process which was employed in the days of old brown powders, when the charge was built up from individual grains into a regular column. It is true that the individual grains of smokeless powders employed by us to-day are of a regular shape, that is, each is a cylinder pierced with many small holes, yet absolute irregularity exists in the manner in which the grains are put together to form the whole charge. I have been urging for the last five years that the hickory nut grain be abandoned, and that the regular strips be used in place thereof. To obtain uniformity it is necessary that the whole surface of every part of the powder charge be set on fire at the same time, and this is only possible when powder is used in the form of flat strips or ribbons."

It will be remembered that one of the guns of the "Iowa" had its muzzle blown off during target practice in Pensacola Harbour in the spring of 1903. It is reported that one of the guns that was burst in February bore the scar of a blow received from a flying fragment of the gun that burst previously.—*U.S. Army and Navy Journal.*

Serious Explosion on board the battle-ship "Missouri."—A terrible accident occurred on board the first-class battle-ship "Missouri," while at target practice on April 13th, through the ignition of the charge of one of the after 12-inch guns while loading, which resulted in the death of five officers and twenty-six men. Three rounds had been fired from the gun, the shell had been seated, and two sections of the powder charge had been rammed home, when the explosion occurred, killing every officer and man in the turret, and all but three in the handling room. According to statements made it appears that:—

"At ten minutes to eleven o'clock after the first pointer of the after 12-inch piece had fired his rounds and the second pointer had fired the third shot of his rounds the charge became ignited. It was in the loading of the fourth shot when apparently the first half of the charge had been rammed home that while the second section was being rammed home the gases from the shot previously fired or particles of the cloth cover ignited

the powder. That something was wrong was evident from a dull thud which was heard. Immediately after, without any loud report, flames burst from every part of the turret. Then another explosion occurred much worse than the first and louder in its report. The sixteen hundred pounds of powder in the handling room immediately below had become ignited. This powder was contained in four charges, which had been brought from the magazine adjoining for the purpose of hoisting it to the turret in the ammunition hoist.

"Orders were immediately given to flood the magazine, the order being promptly carried out, but it was due to the gallantry and presence of mind of Chief Gunner's Mate Monson, that the ship was probably saved from destruction.

"Directly after the charges in the handling room had exploded, Monson rushed for the magazine, dashed through the suffocating gases and smoke, found the entrance, and springing into the magazine clanged the great door behind him. In doing so he came perilously near ending his own life. For by the time the door had snapped the sea cocks were opened by those who had been given orders to flood the magazine. These cocks are so arranged that a magazine can be flooded almost in an instant. No one knew that Monson was inside, and when discovered later he was barely alive, the water being up to his neck and he was almost strangled by the flood.

"The officers say that his conduct saved the ship from destruction, as the fire in the handling room would undoubtedly have reached the magazine had he not so promptly closed the door to that mine of high explosives.

"When the turret was entered, twenty-five men were found lying dead in a heap, with the officer of the turret, Lieutenant Davidson, on top, but so mutilated were the bodies that they could scarcely be recognised.

"A Court of Enquiry has been sitting, but their Report has not yet been made public. That the court will be able to secure essential facts about the accident in addition to those already communicated to the Navy Department is regarded as extremely doubtful. As every man in the turret and all but two in the handling room below were killed, there is no one left to tell the story. Thus far there is not the slightest evidence at hand that any of the usual precautions for firing big guns were lacking. The Court may be able to find out more details that will shed more light on the few facts at hand, and even this will be a service. Intense relief is felt that there was no explosion of the gun itself. Had that occurred our naval ordnance would have received a crippling blow."—*U.S. Army and Navy Journal.*

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS FOR MAY, 1904.

The King has been pleased to confer upon the Royal Regiment of Artillery and the Corps of Royal Engineers the honour of becoming their Colonel-in-Chief.

Field-Marshal — Field-Marshal H.R.H. Arthur W. P. A., Duke of Connaught and Strathearn, K.G., K.T., K.P., G.C.B., G.C.S.I., G.C.M.G., G.C.I.E., G.C.V.O., Army Service Corps, and Colonel-in-Chief 6th (Inniskilling) Dragoons, the Highland Light Infantry, the Royal Dublin Fusiliers, and the Rifle Brigade (the Prince Consort's Own), Personal A.D.C. to the King, from the Scots Guards, to be Colonel of the Grenadier Guards.

Generals—General H.R.H. G. F. E. A., Prince of Wales and Duke of Cornwall and York, K.G., K.T., K.P., G.C.M.G., G.C.V.O., I.S.O., Colonel-in-Chief the Royal Fusiliers (City of London Regiment), the Welsh Fusiliers, Royal Marines, and the Queen's Own Cameron Highlanders, to be Colonel-in-Chief of the King's Royal Rifle Corps. General Sir Martin Dillon, G.C.B., C.S.I., from Prince of Wales's Own (West Yorkshire Regiment), to be Colonel-Commandant of the Rifle Brigade (the Prince Consort's Own). General F. W., Lord Grenfell, G.C.B., G.C.M.G., from Commander IVth Army Corps, to be Commander of the Forces in Ireland, and to temporarily Command the IIIrd Army Corps.

Lieut.-Generals — Lieut.-General P. S., Lord Methuen, G.C.B., K.C.V.O., C.M.G., to be Colonel of the Scots Guards, and to be a General in the Army.

Major-Generals—Major-General Sir R. MacG. Stewart, K.C.B., to be a Lieut.-General on the Staff, to Command the Troops in Bermuda, and is granted the rank of Lieut.-General in the Army. Major-General Sir F. Howard, K.C.B., C.M.G., from Inspector-General of Recruiting, to be a Major-General on the Staff to Command the Troops in the North-Western District. Major-General W. H. Hawley to be Colonel of the Prince of Wales's Own (West Yorkshire Regiment).

Colonels—Colonel F. J. Graves, from a Colonel on the Staff, to be a Brigadier-General on the Staff to Command the Troops in Sierra Leone and is granted the temporary rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel H. M. Lawson, A.D.C., from Royal Engineers, to be a Brigadier-General on the Staff, and Chief Staff Officer in South Africa, and is granted the substantive rank of Colonel in the Army, with the local rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel E. Blunt, from R.E., is granted the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel H. Mullaly, from R.E., is granted the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel A. P. Penton, from h.p.,

to be Commandant of the Ordnance College, and is granted the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel H. S. FitzGerald, C.B., from the Durham L.I., is granted the substantive rank of Colonel in the Army. Colonel S. H. Lomax, from A.A.G., IInd Army Corps, to be a Brigadier-General on the Staff to command the 10th Brigade, 5th Division, IInd Army Corps, and is granted the temporary rank of Brigadier-General whilst so employed. Colonel (local Major-General) D. Haig, C.V.O., C.B., A.D.C., Inspector-General of Cavalry in India, is granted the rank of Major-General in the Army. Lieut.-Colonel T. D. Pilcher, C.B., A.D.C., from the Bedfordshire Regiment, to be a Brigadier-General on the Staff, to Command the 3rd Brigade, 2nd Division, Ist Army Corps, and is granted the substantive rank of Colonel in the Army, and the temporary rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel W. P. Campbell, A.D.C., from h.p., to be a Brigadier-General on the Staff, to command the 5th Brigade, 3rd Division, Ist Army Corps, and is granted the substantive rank of Colonel in the Army and the temporary rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel F. Lloyd, C.B., D.S.O., from h.p., to be a Brigadier-General on the Staff, to Command the 1st Brigade, 1st Division, Ist Army Corps, and is granted the substantive rank of Colonel in the Army, and the temporary rank of Brigadier-General whilst so employed. Colonel (temporary Brigadier-General) A. A. Pearson, I.A., from a Colonel on the Staff, to Command a 2nd Class District in India, retaining the temporary rank of Brigadier-General whilst so employed. Colonel A. W. L. Bayley, C.B., D.S.O., I.A., A.D.C., from A.Q.M.G. at Head-Quarters, to be D.A.G. of a Command in India, and is granted the temporary rank of Brigadier-General whilst so employed. To be Colonels on the Staff in India, with a substantive rank of Colonels in the Army:—Lieut.-Colonel and Brevet Colonel H. M. McRae, C.B., I.A., A.D.C., and Lieut.-Colonel and Brevet Colonel J. A. H. Pollock, C.B., I.A. Colonel A. W. Proudfoot, I.A., and officiating 2nd Class District Command in India, is granted the temporary rank of Brigadier-General whilst so employed. Colonel F. Abbott, I.A., a Colonel on the Staff in India, is granted the temporary rank of Brigadier-General whilst so employed.

HOME.—*The Royal Commission on the Militia and Volunteers.*—The report of the Royal Commission on the Militia and Volunteer Forces, which was issued on the 27th May, deals exhaustively with the existing conditions of the Militia and Volunteers, measured by the standard of war conditions, the measures necessary to increase the efficiency of both forces, and the steps required to be taken for the formation of an efficient Home Defence Army. The Commission finds that the Militia, in its existing condition, is unfit to take the field for the defence of the country, although it admits that the defects of the force arise from causes beyond the control of its officers and men; and that the Volunteer force, in view of the unequal military education of the officers, the limited training of the men, and the defects of equipment and organisation, is not qualified to take the field against a Regular Army. The Volunteer force, it is added, owes its origin and its continuance mainly to the energy and goodwill of its officers and men, and the fact that it does not attain to the standard imposed by war conditions is in no way attributable to them. The Commission recommends the adoption of certain measures to increase the efficiency of the Militia and the Volunteers; but states that, even if their recommendations were carried out, it cannot assert that these forces would

be equal to the task of defeating a modern Continental Army in the United Kingdom. After considering and rejecting the arguments for a ballot or the adoption of the Swiss system, the Commission points out that the principles which have been adopted, after the disastrous failure of older methods, by every great State of the European Continent are, first, that as far as possible the whole able-bodied male population shall be trained to arms; secondly, that the training shall be given in a period of continuous service with the colours, not necessarily in barracks; and, thirdly, that the instruction shall be given by a body of specially educated and highly trained officers. "We are convinced," adds the report, "that only by the adoption of these principles can an Army of Home Defence, adequate in strength and military efficiency to defeat an invader, be raised and maintained in the United Kingdom." The report is signed by all the members of the Commission except Sir Ralph Knox, Colonel Satterthwaite, and Colonel Dalmahoy, who have written separate reports. Lord Grenfell adds a separate memorandum on the administration of the Auxiliary Forces at the War Office.—*Précis from the Times.*

CANADA.—*Lord Dundonald's Report.*—Lord Dundonald, in his annual report to the Minister of Militia, points out that the total of the peace establishments of the Canadian Militia under the new system of enrollment and training will include all the officers and non-commissioned officers, or a total of 46,043 men. The existing units expanded to war strength by the new establishments will provide 100,000 men. This will be Canada's first line of defence.

"These establishments further provide sufficient officers and non-commissioned officers to form the basis of a second line. For example, each regiment of infantry will have a field officer, and each company a captain, a subaltern, a sergeant, a corporal, and two men as their nuclei for this purpose, the intention being that as soon as the first line has been mobilised for active service these nuclei will at once set about training duplicates of the corps which have gone to the front, so in a very short time after hostilities have commenced another line of 100,000 men can be put into the field.

"All the officers and non-commissioned officers of the first line will be available for both peace training and war service, and the men will be divided into two classes, as follows:—*a*. Those engaging for both peace and war service, who will be paid and be liable for training in peace. *b*. Those engaging for war service only. The officers and non-commissioned officers who form the nuclei of the second line will be required to do training in time of peace.

"These establishments, it is pleasing to know, have been given your approval. I strongly urge that provision should be made as soon as possible for the supply of the ordnance arms, equipment, and ammunition necessary for the 100,000 men constituting the first line of defence, and also the provision of rifles and ammunition necessary for the second line of defence should be seriously taken into consideration.

"I have already brought to your notice a very important point connected with the efficiency of the Militia, namely, the provision of leaders. The urgency of this matter is as great as ever. To realise how great it is one has but to turn to the pages of the Militia list and see the vast number of officers who are appointed provisionally because they are not professionally qualified. The question of leaders involves not only the

education of those we now have, but the supply of fresh ones to provide for the increased establishments."

The general lays stress upon the importance of educating men to become efficient soldiers, and makes clear the weakness of the present system of schools of instruction under which a subaltern, after obtaining his first qualifying certificate, can advance to the command of a regiment without any further promotion examination, and without any obligation to keep himself up-to-date in military knowledge. He then explains that he has drawn up a plan for completely changing the system of instruction, under which any officer who desires a step in rank should first pass a qualifying examination.

As to general Militia training, Lord Dundonald remarks :—"Having dealt with the education of officers and non-commissioned officers, I will now refer to the training of the whole force in all its ranks. Last year I drew up the following plan, and in doing so I had two considerations in view :—One, that even a moderate scheme for the defence of this country must be based on the fact that a considerable force will be required; the other, that the cost of bringing the whole enlisted *personnel* at once to a high standard of efficiency is more than the people are willing to undertake at the present time. So my aim has been to give the largest possible preparation for war at the least possible immediate outlay. The main idea is, that a few in every unit shall be thoroughly versed in the art of war, through instruction given at the central camp by the best men of every arm in Canada; that a larger number shall be fairly instructed by the better taught and more capable few above named, who would go straight from the central camp to district camps, and that finally on the alarm sounding, the whole 'skeleton' thus constructed shall be clothed with 'flesh and blood' by the addition of men who can shoot fairly well and have some slight knowledge of a soldier's work and duties—that knowledge being acquired partly in the ranks and partly through association with their company headquarters, its lectures and its library.

"Such a force on taking the field should be able in a short time to develop the necessary cohesion, discipline, and hardiness to enable it to perform its duties satisfactorily. It would provide the country with a larger nucleus of trained men than now exists, and it would have great advantage over the present system in producing a large field army. It has been repeatedly demonstrated, and never more clearly than in the late war in South Africa, that quite new troops can be turned into efficient and trustworthy soldiers in a very short time, provided they are gifted with the right soldierly qualities, and have good and experienced officers and non-commissioned officers and a small proportion of trained privates to stiffen the ranks and enable the others to pick up their work by constant example and imitation. If, in addition, the mass is composed of good rifle soldiers, a very formidable body of men can soon be placed in the field. But without good leaders and a nucleus of trained men, this repute can only be obtained after long and painful production and sad experience. In war, as in everything else, the blind can lead the blind only to destruction. If all are equally ignorant and the leaders are incapable, mutual distruct, unsteadiness, want of discipline and panic are inevitable in the first serious action.

"Of course, the proposed system, like every other system, depends on the quality of those who undertake the training on the personal element,

in fact. It is, therefore, of the first importance that the selection of officers and non-commissioned officers for the important duty of training shall be subject to the closest scrutiny, that appointments of a prominent nature shall be probationary, and that only those who have proved their fitness shall be confirmed in their appointments."—*Canadian Military Gazette.*

FRANCE.—*General Instruction for Manœuvres.*—The French *Instruction Générale sur les Manœuvres* was published on the 1st January, 1904. This document enumerates with great clearness and much detail the outdoor education which should complete the theoretic and practical instruction of the various branches of the Service.

This outdoor education consists of:—*Special exercises* with regard to a particular branch of the Service, for the purpose of developing the technical instruction of that arm; *evolutions*, for the purpose of breaking in the various branches of the Service and large units by placing them altogether in the hands of their chiefs; *firing exercises under service conditions* in order to bring together in action troops of all branches of the Service, for the purpose of acting in concert, and to carry out firing with projectiles; finally, *manœuvres*, in order to teach the various arms to combine their action. These latter consist of three varieties, viz. :—*Cadre*, *Garrison*, and *Autumn Manœuvres.* It may be as well to give a *résumé* of the latter, as being the most interesting:—

The general duration of these, including concentration and dislocation marches, are as follows: Army or army corps, 20 days; infantry divisions, 15 days; infantry brigades, 14 days. The preparation for any particular manœuvres devolves, as a rule, on the general officer entrusted with their direction. Endeavours are made to place troops in the various situations favourable to the development of instruction. Although the ground should, as a rule, lend itself as far as possible to the employment of all the branches of the Service, yet there should be no hesitation in occasionally selecting difficult ground, in the interests of such instruction, especially if the units to operate on it do not exceed a division in strength. "In the carrying out of manœuvres, it is far better to endeavour not so much to multiply the number of the operations, as to give to each of them the necessary development." Having thus laid down the object to be attained, the *Instruction* examines with some detail what evolutions, manœuvres with a skeleton army, and manœuvres with opposing forces, respectively are.

Evolutions are exercises consisting, for the company or troop engaged, in the analytical application of the regulations to the various situations in which that company or troop may find itself, before it has abandoned its route formations, and to the various movements it may then carry out, either prior to becoming engaged, on in the course of the action itself. They should aim especially at the study of the mechanism of the formations and movements, as well as the examination of the many different methods of action in the various cases. The enemy is generally suppositious, or shown by targets to mark the objective. The formations to be taken, in each case, should be appropriate both to the situation and to the ground, and should not be merely type formations. The director of the exercise will change the troops successively from one formation to another, or rather, take one of them unexpectedly; he will march the troops and change direction in the various formations, following various conjec-

tures and incidents with regard to the supposed enemy; he will thus accustom his men to obey him without hesitation and under all circumstances.

Manœuvres with a skeleton army have for their object the breaking in of the unit to the application of the regulations by causing it to pass successively through the various phases of a selected tactical situation, and to thus prepare it for the realisation of a complete action of war. The skeleton enemy does not remain motionless, but manœuvres within certain fixed limits decided upon by the director.

Manœuvres with opposed forces constitute, as a matter of fact, a school for commanding officers. The dispositions freely taken by each side introduces into them an unexpected element, which demand instant initiative, judgment, and decision on the part of the commander. He need no longer worry himself about the training of the men as in manœuvres with a skeleton enemy; it is his own qualities as a commander which are put to the proof. It is indispensable, says the *Instruction*, that the manœuvres should be utilised to break in the troops to outpost duty, which should be carried out exactly as on service, only the proper proportion of the troops being employed on it. Advantage should also be taken of the manœuvres to accustom the troops to the making of bivouacs, and to the carrying out of night operations. The director decides within what limits these exercises should take place. The director of the manœuvres lays down the general idea of the manœuvres and the special schemes for each side. The *Instruction* advises him to follow the same hypothesis during the greater portion of the operations, if he can do so, having due regard to probability. The director is assisted by umpires and assistant umpires. The following are the instructions regarding umpires:—

The duties of umpires are to settle doubtful questions and to avoid all semblance of improbability in the operations. They must not interfere in the direction of the manœuvres. They must keep the director informed with regard to the progress and incidents of the manœuvres. With this object they must endeavour, at all times, to give an account of the respective situation of the troops before them. In view of the criticism, they must always give a verbal or written report to the director of the manœuvres. An umpire should pay attention, not only to the effectives in front of him, but also to the tactical formations taken by the troops, of the manner in which they make use of the ground, and of the effects of fire. According to circumstances, it comes within his province to decide when the moment has arrived for the party attacked to abandon his position, and, on the other hand, to compel the attackers either to await the intervention of fresh troops to continue their progress, or even to retire. In the latter event he indicates the distance at which the troops must reform. Finally, but only exceptionally, he may place troops out of action altogether or partially during the remainder of the manœuvres, only for a fixed space of time. Umpires' decisions are carried out at once, and are without appeal; they must themselves see that their orders are complied with. In an encounter between two isolated detachments, such as advanced posts, should no umpire be present, the senior officer on the spot gives his decision. He must at once report the decision he has given.

Assistant umpires must keep the umpires informed of all incidents that come under their notice during the manœuvres, and must eventually transmit their decision as well as their reports.—*Précis from Revue Militaire Suisse.*

ITALY.—*Manœuvres for 1904.*— The programme of manœuvres to be carried out this year in Italy is as follows :—

1. *Manœuvres of Alpine Groups.*—Manœuvres of Alpine groups will take place from the 1st to the 8th September, inclusive, in the district of the Vth (Verona) Army Corps, and the 5th, 6th, and 7th Alpine Regiments will also take part in them. These regiments will be reinforced by the calling out of a class of the men on leave, and by the formation of two mobile Militia companies per regiment. The following will also take part in these manœuvres:—Two Territorial Militia Alpine battalions; the Venetian Mountain Artillery Brigade; three infantry brigades, with detachments of cavalry and field artillery taken from the army corps.

2. *Landing Exercises.*—Landing exercises from the 1st to the 10th September, inclusive, will take place in the district of the Xth (Naples) Army Corps. The troops belonging to this army corps will take part in the exercises; they will be reinforced by the calling out of the men of the 1878 class belonging to the infantry of the Line and to the Bersaglieri, as well as by units formed from the Territorial Militia.

3. *Scouting Exercises.*—Scouting exercises will take place from the 26th August to the 4th September between Stradella and Cuneo. The following will take part in them :—The Milan Lancer Regiment, The Victor Emmanuel II. Lancers, the light cavalry from Rome and Alexandria.

4. *Staff Rides.*—Detailed instructions for these will be given later.

5. *Cavalry Instruction Rides.*—Detailed instructions for these will be given later.

In addition to these manœuvres there will also be :—

6. *Brigade Training in Camps of Instruction* for all army corps which do not take part in the manœuvres mentioned above.

7. *Manœuvres of Cadres of Army Corps.*—These manœuvres will take place in each army corps under the direction of the general officer commanding.

8. *Siege Manœuvres with Cadres.*—These manœuvres will take place in the Vth Army Corps district, assisted by officers from the IIIrd and VIth Army Corps, and in the XIIth Army Corps district, assisted by officers from the XIth Army Corps. The commanders of the Vth and XIIth Army Corps will each be allowed a sum of £200 for the total expense of these manœuvres.

9. *Cavalry Brigade Camps of Instruction.*—This instruction will be carried out from the 1st to the 15th September, inclusive. The following will take part, viz. :—From the VIIIth Army Corps, the Savoy and Lucca Regiments from the camp at Pisa; from the Xth Army Corps, the Lancers from Florence, and the Hussars from Montferrat and Padua will assemble at the camp of instruction organised at Capua.

10. *Cavalry Cadre Manœuvres* will be carried out in the Ist, Vth, and VIth Army Corps, assisted by the officers of the 1st, 4th, and 6th Cavalry Brigades.—*La France Militaire.*

New Peace Establishment.—A Royal decree, dated 3rd August, 1903, but which was only published in the *Giornale Militare Ufficiale* on the 12th March, 1904, substitutes new tables of peace establishments of the Home Army for those attached to the decree of the 22nd December, 1898.

The following is a summary of the peace effectives fixed by the decree of the 3rd August, 1903 :—

A.—Officers (*Combatant*).

—	Generals.	Lieut.-Generals.	Major-Generals.	Colonels.	Lieut.-Colonels.	Majors.	Captains.	Lieuts. and Sub-Lieuts	Total.
General Staff... ...	5	45	88	—	—	—	—	—	138
Staff	—	—	—	15	3	45	74	74	137
Carabiniers	—	—	—	12	13	37	139	393[1]	594[2]
Infantry	—	—	—	116	231	397	2,005	3,950[3]	6,699
Districts	—	—	—	44	44	44	176	88	396[4]
Cavalry	—	—	—	20	32	52	231	598	933[5]
Artillery	—	—	—	45	70	131	540	929	1,715[6]
Engineers	—	—	—	18	24	45	177	290	554[7]
Fortress Artillery ...	—	—	—	3	5	10	23	22	63
Seconded	—	—	—	18	23	23	202	76	342[8]
Totals	5	45	88	291	445	784	3,567	6,346	11,571

B.—Officers (*Non-Combatant*).

Medical	—	—	3	15	28	71	280	286[9]	683
Commissariat ...	—	—	—	12	12	27	117	—	168
Pay Department ...	—	—	—	1	12	48	335	769	1,165
Veterinary	—	—	—	1	2	10	58	112[10]	183
Totals	—	—	3	29	54	156	790	1,167	2,199

C.—Pensioners and Veterans.

	—	—	—	—	—	1	2	7	10
Grand Total ...	5	45	91	320	499	941	4,359	7,520	13,780

[1] One of whom is bandmaster.

[2] Not including officers employed in naval arsenals, or in the Colonial troops.

[3] 96 of whom are bandmasters; one quarter of the lieutenants and sub-lieutenants may be replaced by supplementary officers.

[4] The majority of whom are in non-regimental employ, excepting a minimum of 31 colonels and 14 lieut.-colonels.

[5] One quarter of the lieutenants and sub-lieutenants may be replaced by officers in excess of establishment.

[6] Do., do.

[7] Do., do.

[8] Officers of all branches of the Service and of the General Staff employed in a military capacity with Royalty, or as Staff applicants, or in the cadres of military schools, etc., or as military attachés.

[9] Lieutenants and sub-lieutenants employed with the infantry of the Line or with the Bersaglieri may be replaced by officers in excess of establishment.

[10] A portion of lieutenants and sub-lieutenants may be replaced by officers in excess of establishment.

D.—RANK AND FILE.

Branch of Service.	N.O.C.'s	Men.	Total.	Horses or Mules.
Carabiniers	5,443[1]	18,781[2]	24,224	3,599
Legion of Cadet Carabiniers	173[3]	2,084	2,257	265
Grenadiers and Infantry	5,478[4]	130,272	135,750	288
Bersaglieri	613	15,912	16,525	36
Alpine Troops	368	10,632	11,000	629
Rome District	260	—	260	—
Disciplinary Corps[5]	80	275	355	—
Cavalry	937	23,280	24,217	20,880
Field Artillery	1,297	20,207	21,504	10,735
Horse ,, ...	60	1,106	1,166	674
Mountain ,, ...	85	2,135	2,220	956
Coast ,, ...	219	4,458	4,677[6]	17
Fortress ,, ...	197	3,971	4,168	24
Artificer Companies	35	465	500	—
Engineers	429	7,824	8,253	560
Railway Groups	64	1,114	1,178[7]	12
Medical Companies	172	2,486	2,658	—
Supply ,, ...	154	1,999	2,153	12
Military Schools	402	999[8]	1,401	715
Total	16,466	248,000	264,466	39,402

[1] 894 of whom are mounted.

[2] 2,705 of whom are mounted.

[3] 36 of whom are mounted.

[4] Including 390 non-commissioned officers specially employed.

[5] *Personnel* of cadres.

[6] Including detachments at Spezia and Tarento.

[7] Including transport detachments attached to the 5th Engineer Regiment.

[8] Not including cadet officers at the schools at Modena and Turin.

Revue Militaire.

JAPAN.—*Japanese Artillery.*—The number of Artillery Regiments is 13, each comprising 9 batteries—3 of them campaign and 2 mountain. The battery has an effective strength of 5 officers, 10 non-commissioned officers, 112 men, and 60 horses (37 for the mountain battery, 30 of which are draught animals). There is no heavy Army Field Artillery. The officers of all classes are recruited at the special Military School; those of the Artillery afterwards passing through the School of Applied Artillery and Engineering. Before entering the special Military School, the candidates admitted do a year's service in a regiment as simple soldiers; then they pursue the school course for two years, and afterwards spend six months in the regiment before being made officers.

The Artillery establishments are :—1. The two powder mills of Itabaska (3·5 miles from Tokio) and Iwahaua, in the province of Kozanke (72 miles to the north of Tokio); 2. the Arsenal of Tokio, which comprises a manufactory of arms, a cartridge works, a repair shop, and a pyrotechnic laboratory; 3. the Arsenal of Osaka, which comprises a gun foundry, a manufactory of gun carriages, a projectile foundry, and a pyrotechnic laboratory; 4. the Arsenal of Taipe in the Island of Formosa, to the west of Kilanny; and 5. the gun foundry of Kouse.

In Japan, the Artillery is considered as the select branch of the Service.

Coast Defence Guns.—It is probable that in the near future the Japanese will be independent of foreign makers in the provision of large guns for coast defence, just as they expect, with the increase of their naval gun-making establishments, to be eventually able to supply their new warships entirely with pieces of home manufacture.

The earlier coast-defence guns were made largely by the celebrated Schneider-Canet Company at Creusot, France, and are the same as described in the Military Notes of the JOURNAL for December, 1902, under France.

Of late years, however, the Japanese have abandoned the disappearing gun in favour of guns mounted "en barbette," the gun appearing permanently above the parapet. It is carried on a gravity-return barbette carriage. The gun, by its trunnions, rests in the bearings of a massive cast slide, each half of which carries half a dozen steel rollers on which the gun moves in its recoil up the inclined paths of the lower rotating carriage. The usual recoil checks are provided, and the gun returns to battery by its own gravity, aided by the action of coil springs. The whole gun carriage is carried upon a circle of steel rollers, and the gun is elevated and transversed to right or left by the crank arms. The Japanese fortifications are armed with this type of heavy gun in various sizes.

Field Guns.—The present period of the transformation of the Artillery finds Japan in possession of a 3-inch hardened bronze gun manufactured at the Osaka Arsenal. This gun is provided with a screw fermature and ordinary pointing devices. It throws an 8·8-lb. belted copper shell with an initial velocity of 1,380 feet. It is drawn by small horses of the pony type, the rations of which consist of 11 pounds of hay and 9 quarts of barley.

The mountain gun is of the same calibre, and throws the same projectile with the same initial velocity.

Awake to the progress of Europe, Japan has submitted the question of the rapid-fire gun to deep study; and although she has, indeed, made an appeal to European industry for aid in this matter, she has rather preferred to rely upon her own resources, and has adopted a gun devised by Colonel Arisaka. Although the full particulars of this gun are not definitely known, it is fairly certain that it possesses in full those elements of rapid fire that distinguish the latest rapid-fire artillery of European nations. That it is a most effective piece is proved by the crushing fire which it delivered against the Russian entrenchments at the battle of the Yalu, when the enemy were so thoroughly shaken up that they could not withstand the subsequent infantry attack.

Machine Guns.—Japan, in 1902, organised two batteries of machine guns, and assigned them to the two first divisions. One of them is provided with 6 Maxim guns, and the other with 6 Gatlings. Experience will decide as to the selection to be made between these two systems. Each battery comprises 3 officers and 52 men. The instruction as to the use of the guns makes it incumbent upon the division commander, in time of war, to assign a section to each of the brigades of infantry, and to the regiment of infantry of his division.

Armament of the Japanese Infantry. — Japan made war upon China in 1894 and 1895 with the guns of Engineer Mourata, of the 1880 and 1887 types, having a calibre respectively of 0·4 and 0·3 of an inch. These guns at present arm only the troops of the second line. The new

gun is due especially to Colonel Arisaka. It is of the type of 1897, and is manufactured at the Tokio works. Like the Russian gun, it is a repeating one and of a small calibre (0·25 of an inch), and with a central magazine for five cartridges. It belongs to the Mauser type.

The barrel, which is 31 inches in length, is provided with six grooves turning from left to right. The breech-sight is mounted upon it by means of a long sleeve, the upper part of which, flattened and hollowed, forms its foot; and the prismatic muzzle-sight is secured to a small hoop that surrounds the tapering end of the barrel.

The movable breech is of the bolt system, and turns back upon the side. The magazine, closed at its lower part by a cover, contains an elevating plate actuated by a spring. If the magazine is empty, this plate places itself in front of the movable head after the opening of the breech, and consequently prevents the closing of it. The object of this arrangement is to notify the soldier that the magazine contains no more cartridges. The recharging is done by means of a brass charging plate provided with five cartridges.

The mounting calls for no particular notice. The stock is formed of two pieces.

The breech-sight has no steps. Its plate is graduated from 400 to 2,000 yards. Up to 400 yards the soldier makes use of a notch formed in the heel of the plate near the joint. Beyond this he employs the notch of the slider and the two notches of the plate. The slider is fixed at the proper division by means of a small click, of which the tooth is held in the corresponding notch formed upon the side of the plate, by means of a spiral spring. The sabre-bayonet has a 21-inch blade with a simple bevel and hollowed sides.

The cartridge comprises a shell, a primer, a charge, and a ball. The shell is of brass with a very convex cap; the primer contains fulminate, covered with tin-foil; the charge consists of 32 grains of Itabaski smokeless powder, distributed in scales and strongly plumbagoed; the ball, which is of hardened lead, with a German silver jacket, weighs 158 grains, and is 1·25 inches in length. The total weight of the cartridge is 336 grains; that of the charging plate, empty, 128 grains, and full, about 4 ounces. The charging plates are united in threes in cuneiform cardboard boxes weighing 12 ounces each.

Complementary Data. — Initial velocity, 2,378 feet; pitch of the trajectory at 500 yards 3·87 feet; length of the gun without bayonet, 4·16 feet; length of the gun with bayonet, 5·44 feet; weight of the gun without bayonet, 8·6 pounds; weight of the gun with bayonet, 9·6 pounds; penetration of spruce at 130 feet, 7·5 feet.

The number of cartridges carried by the Japanese foot soldier is 120 (as in Russia), partly in two cartridge boxes and partly in boxes in the knapsack.—*Scientific American.*

MONTENEGRO. — *Organisation of the War Department.* — Up to the present the War Department has had no apparent organisation, and its business, which was of a very sketchy description, was not distributed according to any fixed rule. The War Minister had under him three or four officers of the rank of major or captain, who were employed, as the necessity arose, in studying the various questions brought before them. Nevertheless, recently the necessity for a classification and of a distribution of work, permitting the rapid control and the easy administration of the Army, has made itself felt. From this has arisen the very detailed

organisation instituted by the law of the 19th December last. It will be at once noticed that the essentially military character of the country, and the supremacy of the interests of the Army, are proclaimed by Article I. of the law, which defines the War Minister as "the highest administrative authority in the country." His powers are, as a matter of fact, of the greatest importance, for every Montenegrin fit to carry arms would be an effective portion of the mobilised troops, or would be called out to contribute towards the service of the Army. The War Department consists of four officers, at the head of each of which is a brigadier or a field officer:—

1. Military branch or office.
2. Artillery branch or office.
3. General Staff branch or office.
4. Administrative branch or office.

There is, in addition, a Treasury and a Bureau for Archives.

The chiefs of these branches work with the War Minister, and are responsible to him. They are members of the Council of War which, under the presidency of the War Minister, decides all important questions with reference to the Army. The Commander of the Regular Army is also a member of this Council, to which may also be added the section chiefs interested. Each branch is divided into sections, whose powers are laid down by law. The military branch consists of three sections, viz.:—

1. Organisation section.
2. Judicial section.
3. Medical section.

The organisation, the effectives, the calling out of men for service, remounts, instruction, promotion, the officers' *personnel*, pensions, preparation of regulations and decrees affecting the Army, are all part of the duties of the 1st Section. All questions, however, affecting the artillery are dealt with in the office of that branch of the Service.

There are two sections in the artillery branch:—

1. The Organisation Section, which has the same duties as regards the artillery as the 1st Section of the military branch.

2. The Technical Section, which deals with the equipment, repair, upkeep, and the distribution of arms and ammunition.

The General Staff Branch is divided into three sections:—

1. Mobilisation.
2. Statistics.
3. Operations.

The *Mobilisation Section* deals with returns of the resources in men, horses, *matériel*, and supplies of all sort, fixes the mobilisation points of units, the distribution of magazines and convoys.

The *Statistic Section* obtains all information regarding probable theatres of operations and of neighbouring armies.

The *Operation Section* studies and prepares both the probable plans of warlike operations, as well as the schemes for the annual manœuvres.

The Administrative Branch consists of two sections, viz.:—

1. Disbursement Section, or supplies in peace time (preparation, fixing of the quantities, maintenance).

2. Commissariat Section, which studies and prepares the constitution of supplies and their use in war.

The Treasury centralises all the Army disbursements, and submits them to the Court of Payment, and finally the Bureau of Archives deals with general correspondence.

As has been already mentioned, general or field officers are at the head of the different branches or offices, whilst officers of lower rank are at the head of the sections, having one or two assistants under them for the more important sections.—*Revue Militaire.*

RUSSIA. — *The Russian Army.* — Every year about 850,000 Russian youths reach the age of twenty-one, when they are liable to service either in the Tsar's Army or his Navy. For twenty-two years thereafter they are either under military or naval training, or are subject to a call to arms. The Government, however, is quite lenient, and for one reason or another a large number of men are exempted from service. No clergymen, doctors, or teachers need serve. About 220,000 men are annually taken into the Navy or the Active Army, while the remainder form a vast reserve. The term of service varies in different parts of the Empire. In European Russia the period of active service is five years; in Caucasia, three years; and in Asia, seven years. The Reserve is formed of two divisions, the first being composed mainly of those who have received training in the Active Army, as well as all able-bodied men who have not received such training. These could be called upon for active service in time of war. The second division comprises all the able-bodied men who have served their term in the first division, and all others who, on account of ill-health, or the like, are exempted from active service. Special conditions exist in the case of the Cossacks. These fierce, warlike people are born fighters. From their very childhood they are trained to deeds of daring, and the whole people are looked upon by the Government as a portion of the military organisation. At the age of seventeen, military service begins at the Cossack post, and three years later this is followed by field service, which continues for from twenty to twenty-five years. The Cossacks are divided into three classes: First, the active soldiers; second, those on furlough with their arms and horses; and third, those on furlough without their arms and horses. The Cossacks are organised into eleven separate "voiskos," or corps, each "voisko" being obliged to clothe and arm its soldiers.

Russia is divided into fourteen military districts. The Army on a peace footing is estimated at 42,000 officers and 1,000,000 men, and in war at 75,000 officers and 4,500,000 men, with half a million horses. There are 21 army corps, 213 infantry regiments, 114 regiments of cavalry, and 511 batteries of artillery. In time of peace it is estimated that the infantry numbers 710,000 men, cavalry 130,000 men, artillery 150,000 men, engineers 42,000 men, besides 40,000 others in Army service. The infantry is composed of 52 infantry divisions, 24 rifle brigades, 25 separate infantry brigades, 2 separate rifle battalions, 8 separate infantry battalions, 21 fortress regiments, and 12 fortress battalions. Each infantry division is composed of two brigades, each brigade of two regiments, each regiment of four battalions, and each battalion of four companies. An infantry regiment is usually composed, in time of peace, of 70 officers and 1,867 men; in time of war the officers number 79, and the men 3,945. The cavalry is made up of 24 divisions, 5 brigades, 7 separate regiments, and 3 double squadrons; 2 divisions of Guards, 17 divisions and 2 brigades of Dragoons, and 6 divisions of Cossacks. The cavalry is divided into four and six-squadron regiments, the former comprising 32 officers and 779

men in time of peace, and 30 officers and 673 men in time of war. The six-squadron regiments comprise 38 officers and 1,071 men in peace, and 36 officers and 948 men in time of war. The artillery is composed of Field, Horse, Guard, Grenadier, and Line Brigades. In time of peace each field battery has four guns, and in war eight guns. Each horse battery has six guns both in peace and in war. Each mortar battery has six guns. The Engineers consist of 29 sapper battalions and 8 pontoon battalions.

The Russian people are composed of the aristocracy and the common class; there seems to be no middle class. In no other European country is there such a gulf between the high and the low class of society. The officers are almost exclusively taken from the upper class, and the common soldiers from the lower class. The latter are a very slow, stolid, and ignorant lot; but they possess the merits of explicit obedience to their superiors, and indifference to danger or death. Aside from this, owing to their splendid physique, they can endure great hardships, and are admirably adapted for long and difficult campaigns.

Russian Artillery.—As a result of the experiments made between 1898 and 1900 with different rapid-fire guns, the Tsar has adopted the 3-inch rapid-fire gun of the type of 1900, devised by General Engelhardt, and constructed by the Pontilov establishment. The manufacture of this material, however, has been submitted to some delays, so that, up to the present, but three batteries of it have been constructed.

The gun is provided with a rapid-closing breech-block of the screw type, which operates in a single motion. It is mounted upon a small cradle, which, after a shot has been fired, recoils about 36 inches upon the slides of the carriage. The live power of the recoil is absorbed by a hydraulic brake and a recuperator formed of a series of rubber buffers. The recoil of the carriage is prevented by a rigid trail-spade. The carriage is capable of sliding upon the axle, and thus permits of direct pointing when the spade is inverted in the ground. The Russian gun fires about fifteen shots a minute.

The shrapnel of this gun weighs 14·4 pounds, contains 260 balls of 160·5 grains each, and is provided with an aluminium double-acting fuse of 9 ounces. It forms a cartridge with the charge of smokeless powder, and is fired with an initial velocity of 1,928 feet. The weight of the carriage is 4,145 pounds. In battery, the caissons are arranged alongside of the guns, as in the French Artillery.

In addition to the three rapid-fire batteries, of which we have just spoken, the Russian Campaign Artillery comprises:—(1) Light Horse Batteries of 3·4-inch guns; (2) Heavy Horse Batteries of 4-inch guns; and (3) Mortar Batteries of 6-inch guns. There are also mountain guns.

The 3·4-inch accelerated fire gun is of steel, and has its origin in the slow-fire gun of the types of 1877 (Krupp) and 1879 (Oboukov). The improvements introduced in 1895 by General Engelhardt have made of it an accelerated-fire gun, capable of firing from 5 to 6 shots a minute. The barrel, properly so called, is identical in both the light and horse batteries, except that, in the latter, it is a little shorter. It has a movable chamber consisting of a thin tube driven into and secured in the barrel in a cold state. It was originally constructed with the Krupp wedge breech mechanism, but has since been provided with the Bange screw arrangement.

In 1895, the pointing devices (rack breech-sight and Broca muzzle-sight) were placed in front and upon the side of the barrel. The object of this arrangement was to expose the breech during the loading, and consequently to increase the rapidity of firing by permitting of pointing during the loading.

The carriage (Engelhardt type of 1895), upon which the barrel is mounted, permits of checking the recoil without undue strain on the parts through a trail-spade provided with an elastic joint. This spade, which is jointed to the trail through the intermedium of two rods, is connected with a stock by a combination of two jointed rods. Upon the posterior rod are strong rubber buffers separated by thin metallic discs. These buffers are held at the rear by a plate screwed to the end of the rod, and bearing in front against the back face of the shoe. When the shot is fired, the piece recoils, the trail-spade enters the ground, and the carriage continues its recoil in causing the spade to pivot around its bearing point. During this rotation, the spade compresses the buffers, which, expanding after the recoil, bring the gun back to battery. In order that the carriage may not be submitted to an excessive strain through the recoil, rubber buffers are interposed between the axle and the body. Besides, in order to permit of pointing in direction when the stock is rendered immovable by the spade, there is added to the carriage an arrangement that permits of displacing the latter upon the axle. What especially prevents this gun from being a rapid-fire one is the rising of the piece during the firing. Such rising, however, has been notably reduced in the new 3-inch gun.

The 3·4-inch gun fires 15-pound projectiles with a charge of smokeless powder, and an initial velocity bordering upon 1,410 feet, such projectiles being a shrapnel with rear charge, a case-shot, and an explosive shell. The fuses are double-acting, and graduated for time. The weight of the carriage is 4,160 pounds.

The 4-inch heavy gun is destined to disappear as soon as the rapid-fire gun is put in definitive service. It is very heavy (4,840 pounds), and would, at the most, be adapted only for the heavy artillery of the Army. The gun is of steel of the 1877 type (Krupp) or of the 1879 (Oboukov), these two types differing only in the arrangement of the jacket that covers the tube. It is provided with a wedge breech-block of the Krupp type, and is mounted upon an elastic carriage of the Engelhardt type of 1877. At the moment of firing, the carriage displaces itself two inches with respect to the axle, by compressing rubber buffers that deaden the shock. This arrangement has permitted of the addition of a trail-spade for checking the recoil without excessive strain on the carriage.

The initial velocity is 1,225 feet, and the 26-pound projectiles fired are a double-walled shell with percussion fuse, a shrapnel with a rare charge, and a case-shot with double-acting fuse.

The 6-inch mortar used for high-angle firing was adopted in 1886, as the result of ideas that were materialised after the Turko-Russian war of 1877-78. It is the first of the short Army pieces that the majority of the Powers have constructed. The barrel, which is of steel, is of the Oboukov type, with wedge breech mechanism. The carriage is original; between its body and the axle there are two rubber buffers, as in the 3·4-inch gun. These buffers, which stand almost vertically *en route*, serve as suspension springs during a march and of elastic bands in firing. Under the body of the carriage are suspended two ground-brakes connected by a cross-piece. Each of these consists of an upper part forming a piston, and of a lower one forming a pump chamber, and of intermediate rubber buffers. When

the shot is fired, the carriage recoils upon the axle by compressing the axle buffers. The brakes, descending with the carriage, rest upon the ground, and their pistons compress the corresponding buffers. These parts then, in the absence of trail-spades, support the entire stress of the recoil.

Despite its calibre, this weapon, which is thin-walled, is not heavy, the weight being 1,800 pounds in the piece in battery, and 4,300 in the horse-drawn piece. But its range (10,495 feet) is short as compared with the ranges at present obtained. With a maximum initial velocity of 720 feet, it throws a 68-pound shrapnel, a 62-pound fougade shell containing 13 pounds of melinite, and an "illuminating shell." This latter, due to Captain Nilus, is adapted to illuminate the sites of the enemy at night long enough to permit of pointing.

The mountain gun is old, and presents no interest. The same is the case with almost all mountain guns, the various Powers having begun the transformation with campaign guns. The piece is of a calibre of 2·5 inches, and weighs 214 pounds. It is mounted upon a carriage weighing 334 pounds. There are both mounted and horse-drawn mountain batteries.

Eight batteries of four Maxim machine guns of 0·275-inch (the calibre of the Russian gun) were, in 1900, formed in Siberia. Each of these comprises 1 captain, 2 lieutenants, 7 non-commissioned officers, 50 men, and 22 horses, and an ammunition supply for 5,850 shots per gun. The machine guns are drawn by mountain artillery fire-carriages, and each of them carries 1,350 cartridges upon loading-bands. The supply of ammunition is contained in four two-wheeled carriages, with 4,500 cartridges to each. In addition, the battery is provided with six two-wheeled service carriages. Some of these batteries of machine guns participated in the operations in China, particularly in the engagements at Tien-Tsin. Since then, five companies of machine guns have been created by a ukase of 23rd March, 1901, and apportioned to four divisions of infantry of Europe and to one brigade of chasseurs of Siberia.

Armament of the Russian Infantry. — The gun is that of Colonel Mossine, of the Russian Artillery, and bears the name of "3-line (·275-inch) gun of the 1891 type." It is a repeating arm with a central magazine for five cartridges.

The barrel is 30 inches in length, and has four grooves, directed from left to right. The breech box, which is screwed to the rear of the barrel, is provided on the side to the left with a piece that performs the double rôle of a cartridge shell ejector and an isolator between the cartridge introduced into the chamber and the cartridges of the magazine. The movable breech is of the bolt type and swings back at the side. The magazine consists of a box formed of two lateral walls and closed by a cover at the lower part. It contains the elevating mechanism, formed of a lever joined to the cover and a plate jointed to the lever. Two springs tend to raise the latter and the plate respectively. It receives a loader provided with five cartridges. If it be desired to use the gun as a single-shot weapon, the magazine must contain but four cartridges, and care must be taken to press the upper cartridge with the finger in order to permit the movable head to pass over its flange. The stock is of walnut or birch, and is provided with the usual accessories. The breech-sight is stepped and provided with a slider. It is graduated upon its right-hand side into hundreds of paces (28 inches), from 400 up to 1,200. The movable plate likewise is graduated into hundreds of paces, from 1,300 to

1,600. Its movable slider, which is held by a spring, serves for indicating distances.

The bayonet comprises a quadrangular blade, which becomes progressively narrower towards the point, and the usual socket and catch, and remains fixed at the end of the barrel, even during firing. The cartridge comprises the shell, primer, powder-charge, and ball. It has no wad. The shell is of brass and provided with a flange. The primer contains fulminating powder covered with a disk of tin. The charge consists of thirty grains of smokeless powder of a basis of gun-cotton. The ball, which is of hardened lead, with a German silver jacket, weighs 310 grains, and is 4 calibres (1·2 inches) in length. The total weight of the cartridge is 390 grains, that of the loader, when empty, 147 grains, and that of the same when loaded, 4·25 ounces. The elevation of 00 paces corresponds to the line of fixed aim constituted by the sight-plate folded. It gives a sweeping trajectory up to a distance of 600 paces. It is employed when there is no time to spare to give the exact elevation, up to 600 paces, against infantry, and 800 against cavalry. In such a case the marksman aims at the upper half of the object.

Firing by volleys is employed at all distances, and individual firing up to 600 and even 1,200 paces, if it is concentrated by groups of marksmen upon the same point. Rapid firing is done at the command of "Rapid fire!"

Complementary Data.—Initial velocity, 2,035 feet; maximum pressure per hundredth, 4,400 pounds; pitch of the trajectory at 1,970 feet, 72 feet; length of the gun without bayonet, 4·25 feet; length of the gun with bayonet, 5·7 feet; weight of the gun without bayonet, 8·8 pounds; weight of the gun with bayonet, 9·5 pounds. The number of cartridges carried by the Russian foot soldiers is 120, partly in two cartridge boxes secured to the belt, and partly in the knapsack.—*Scientific American.*

WAR NOTES.

There is little to add to last month's notes with regard to the position at Feng-hwang-cheng, which, as previously stated, was occupied by the Japanese on 6th May. Constant collisions have taken place between Cossacks and the Japanese cavalry near that place, but there does not appear to have been any fighting of a serious nature. In a despatch published at St. Petersburg on the 22nd May, General Kuropatkin says: "From reports received yesterday I have concluded that the Japanese Army is concentrated as follows:—Two divisions at Feng-hwang-cheng, and its environs, and one at Habalin, half-way between Siu-Yen and Feng-hwang-cheng. It is stated that Feng-hwang-cheng is being fortified." The Japanese advance has, it is reported, been delayed by bad weather, heavy roads, and the threatening of their communications by Cossacks, 5,000 strong, under General Mistchenko, who apparently advanced south by the Vladivostok-Gensan road to within 150 miles of Gensan. They were last reported near Tan-shan, marching westward towards Kap-san. General Rennenkampff's division is apparently north of Feng-hwang-cheng attempting to harass the Japanese communications.

The 2nd Japanese Army, under General Oku, continued its advance in the Liau-tung peninsula with the object of cutting off and investing

Port Arthur. On the 26th May, General Oku drove the Russians from Kin-Chau on the west of the Liau-tung peninsula, and 35 miles to the N.W. of Port Arthur. The occupation of Kin-Chau by the Japanese was followed by a desperate and sanguinary struggle for the possession of Nan-Shan Hill, to the west of Ta-lien-wan, and which formed the extreme left of the Russian position. This position, which was naturally a strong one, had been elaborately fortified and mounted, not only with field guns, but also with pieces of heavy calibre, presumably taken from the ships at Port Arthur. Minute reconnaissances by Japanese officers revealed the strength of the Russian position on Nan-Shan Hill, which consisted of a series of batteries, rifle-pits, mines, and wire entanglements. After repeated assaults the Japanese at last stormed the Russian position on the 28th by a frontal, combined with a flank attack on the Russian left, in which the stormers waded through the sea breast-high, supported by the fire of the Japanese gun-boats and destroyer flotillas. The Russians retired in confusion, burning their magazines at Ta-fang-shin, and were pursued far into the night. General Oku reported that his force captured 68 guns, ten machine guns, many rifles, and warlike stores and ammunition from the Russians. He estimates that the Russian force consisted of 1 line division, 2 batteries of field artillery, some fortress artillery, and marines. The official returns of the Japanese losses in the battle show that 33 officers and 706 men were killed, and 100 officers and 3,356 men wounded. The Russians give their full losses at 800, but as the Japanese general states that 704 Russians were found dead on the field, it would appear that the losses of both sides were fairly equal. On the 30th May a Japanese force occupied Dalny, when a large quantity of railway rolling stock was seized.

The latest reports appear to indicate that General Kuroki's army, supported by the force which landed some time ago at Ta-ku-shan, has commenced a general forward movement. Following the occupation of Saimatse on the 7th June, Kuroki's forces advanced on Siu-yen on the 8th June, and drove out the Russians with some loss. Siu-yen is about 40 miles from Kai-ping, and 45 from Hai-cheng, and controls the roads to those places. Earlier in the week there were some successful operations, on the part of the Japanese, in the direction of Tung-yuan-pu. The *Militär Wochenblatt*, in a recent issue, estimates that the Russian field forces, inclusive of the Siberian reserves, number 190,000 men, with 430 guns, and that the European reinforcements now mobilising will bring that total up to 250,000 men, with 638 guns. The Japanese field army, inclusive of reserves, numbers 226,000 men, with 780 guns, but precisely how many have been landed is not known.

CORRESPONDENCE.

To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

PRIZE ESSAY COMPETITION.

United Service Institution of N.S. Wales,
Queen's Square, Sydney,
6th May, 1904.

The Secretary, Royal U.S. Institution,

SIR,—

I have the honour to forward you the enclosed Notice with reference to the Annual Prize Essay of the United Service Institution of New South Wales.

All Officers holding His Majesty's Commission, whether Imperial or Colonial, are eligible to compete.

I have the honour to be, Sir,
Your obedient servant,
W. K. S. MACKENZIE, Captain,
Hon. Secretary.

NOTICE.

United Service Institution of New South Wales.

The Council of the Institution, having decided that a Gold Medal and a prize of five guineas be granted annually for the best essay on a Naval or Military subject, make known the conditions of the competition :—

1. The candidates must be members of the Institution, or persons eligible to become members.
2. The subject for this year shall be of a military character.
3. The Essays must not exceed 30 pages (exclusive of tables), of the size and style of the JOURNAL, each page averaging 540 words.
4. When a reference is made to any work, the title of such work to be quoted.
5. The Essays must be received by the Secretary on or before the 1st November, 1904.
6. The Essays must be strictly anonymous, but each to have a motto, and to be accompanied by a sealed envelope with the motto written on the outside and the name of the candidate inside.
7. The Essays will be submitted for decision to three Referees, chosen by the Council; but no awards will be made by them in favour of any Essay which does not, in their opinion, attain a sufficient standard of excellence.
8. The award of the Referees will be made known, and the Medal presented to the successful candidate (or his representative) at the Annual General Meeting, and his Essay will be printed in the JOURNAL.
9. The Council shall be entitled to print any of the Essays submitted.
10. The following is the subject for the Essay for the year 1904 :—

"THE PROVISION OF TRANSPORT FOR THE DEFENCE FORCE OF AUSTRALIA IN TIME OF WAR."

This subject is intended to include a discussion of :—

a. The method of impressment under Section 67 of the Defence Act.
b. Organization.
c. The type or types of vehicles to be used.
d. The provision of the required *personnel*.
e. The provision of the transport animals required.
f. The numbers required for the War Establishment.
g. The preparatory measures to be taken during peace.

NOTE.—All Officers holding His Majesty's Commission, whether Imperial or Colonial, shall be eligible to become members. (Rule 4.)

NAVAL AND MILITARY CALENDAR.

MAY, 1904.

1st (S.) The Japanese, after several days' fighting, stormed Kiu-lien-cheng, on the Yalu, and drove out and routed the Russian force entrenched there. Japanese casualties 900, Russian about 3,000.

" " Intelligence received of severe fighting by Major Trenchard's column in Southern Nigeria. British casualties 11, enemy's 200.

2nd (M.) Lord Kitchener's Memorandum on the Re-organisation of the Indian Army was issued.

3rd (T.) H.M.S. "Challenger" commissioned at Chatham for Australian Station.

4th (W.) 2nd Bn. Cameronians } left Cape Town for England
2nd Bn. Northamptonshire Regiment } in the "Dilwara."

5th (Th.) The Thibetans attacked the Mission Camp at Gyangtse but were repulsed after two hours' fighting, losing 250 killed and wounded.

6th (F.) H.M.S. "Anson" paid off at Chatham.

" " Japanese second army landed in the Liao-Tung Peninsula, and commenced the investment of Port Arthur.

" " General Kuroki occupied Feng-huang-cheng without opposition.

" " Thibetans were driven from their defences at Karo Pass, after 6 hours fighting, with heavy loss.

10th (T.) H.M.S. "Prometheus" paid off at Devonport.

" " 1st Bn. Garrison Regiment arrived in South Africa from Malta in the "Sicilia."

11th (W.) H.M.S. "Theseus" commissioned at Chatham for service with Channel Fleet.

12th (Th.) H.M.S. "Diana" paid off at Chatham.

13th (F.) 1st Bn. South Staffordshire Regiment left Cape Town for Ireland in the "Dunera."

16th (M.) H.M.S. "Gibraltar" arrived at Spithead from Cape.

" " The Japanese occupied Kai-ping, 30 miles south-east of Nieu-chwang.

" " 2nd Bn. The Queen's (R. W. Surrey Regt.) } left South Africa for Eng-
2nd Bn. Gloucestershire Regiment } land in the "Soudan."

17th (T.) H.M.S. "Exmouth" paid off at Chatham.

" " H.M.S. "Hawke" paid off at Chatham.

" " Launch of new U.S. first-class battle-ship "Rhode Island" from the Quincy Yard, Massachusetts.

" " H.M.S. "Prince of Wales" commissioned at Chatham for Mediterranean.

18th (W.) H.M.S. "Exmouth" commissioned at Chatham for Home Fleet.

19th (Th.) H.M.S. "St. George" left Portsmouth for Gibraltar.

" " H.M.S. "Theseus" left Sheerness for Gibraltar.

" " 2nd Dragoons (Royal Scots Greys) } left South Africa for Eng-
2nd Bn. South Wales Borderers } land in the "Plassy."

20th (F.) H.M.S. "Prince of Wales" left for Mediterranean.

" " H.M.S. "Hogue" paid off at Devonport.

21st (Sat.) H.M.S. "Suffolk" commissioned at Devonport for Channel Fleet.

" " H.M.S. "Intrepid" paid off at Portsmouth.

24th (T.) A British convoy with additional troops and guns arrived at Gyangtse, Thibet.

25th (W.) 2nd Bn. Cameronians (Scottish Rifles) } arrived in England from
2nd Bn. Northamptonshire Regiment } South Africa in the "Dilwara."

26th (Th.) H.M.S. "Royal Arthur" arrived at Portsmouth from Australia.
" " Major Brander took Palla, Thibet, after 14 hours' fighting.
" " The Japanese stormed and captured Kin-chau, 35 miles to north of Port Arthur. Japanese casualties 4,034, Russian about 2,500. The Japanese also captured 68 guns, 10 machine guns, many rifles, ammunition, and *matériel* of war.
27th (F.) H.M.S. "Blenheim" arrived at Nore from China.
" " The Report of the Royal Commission on Militia and Volunteers was issued. Conscription recommended.
29th (S.) Head-Quarters and 5 Companies 1st Bn. Hampshire Regiment left Aden for England in the "Assaye."
31st (T.) H.M.S. "Cambrian" arrived at Plymouth from South Atlantic.

FOREIGN PERIODICALS.

NAVAL.

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NOTICES OF BOOKS.

The People's War in France. By Colonel LONSDALE HALE. The Pall Mall Military Series. 8vo. Pp. 284. Hugh Rees & Co.: London, 1904. Price 6s.

This work deals with the War in France, from the Investment of Paris, 19th September, 1870, to the second capture of Orleans 4th December, 1870. In this period of the war, the civil population rose and assisted the Army in the defence of the country. For 23 years the details were kept secret by the German General Staff, and in 1893-97 were to a certain extent given to the world in Hoenig's "Volkskrieg an der Loire," on which work Colonel Hale's narrative is mainly founded.

In the preface, Colonel Hale writes: — "Very many years' close connection with British officers of all arms and branches of the Service has led me to the conclusion that urging them to read Military History because Napoleon and Wellington did so, raises in them no responsive echo. The examples given are far beyond their ambitions; they aspire to become good soldiers, but not Napoleons or Wellingtons. But they will all admit that the more an officer, field-marshal or subaltern, on taking the field, knows of what has happened, or what may happen in War, the better practical soldier he will be, for to those who know nothing of the past, everything that comes is new and unexpected, and they are taken by surprise. . . . . So in these pages I have narrated for the British officer 'something to read' about war. This small book does not pretend to be an erudite work; so I hope if the aforesaid British officer takes up the book to read, he will not think it necessary to sit at a table on which to rest his elbows, with his head between his hands, and with a pair of compasses by him to measure distances. Let him repose in an arm-chair, with, on his knees, the excellent map thoughtfully provided by the publishers, and I think he will be able to follow the narrative quite easily. He will also find that the first time a place is named, I have appended to the name, in rectangular brackets, the distances at which the place is from important points; and further, in these brackets are illustrative or explanatory remarks of my own."

Again "From it [the book] soldiers will learn the 'seamy side' of Command and Staff work; the Regular Army will form a better appreciation than they at present possess of the capabilities of the rank and file of even the shortest service soldiers; the Auxiliary forces will be impressed with the value of a highly trained army in the field, whether for offence or defence: and rifle clubs will realise that whilst they can be of great value in home defence, there are distinct limitations to the sphere of their operations and of their usefulness."

The Infantry Weapon and its Use in War. By Lieut.-Colonel C. B. Mayne, R.E. Smith, Elder & Co. : London, 1903. Price 6s.

A rather general complaint was made against Lieut-Colonel Mayne's "Infantry Fire Tactics" that it was more scientific than practical, and consequently failed to meet entirely the purpose for which it was intended, simply because the average officer did not understand it, and therefore would not read it. No such objection can justly be raised against the present work, which, instead of taking science for its base, does just the opposite; and, commencing with the desired practical effect, invokes the aid of science to show how such effects can be augmented to the utmost. Rough and ready methods and "common-sense" are all very well in their way; but the capabilities of a modern rifle being absolutely reliable if properly brought into play, it is obviously desirable that we should be taught to apply them under the most favourable conditions revealed by scientific research. Colonel Mayne has experience of war in addition to having conducted or taken part in numberless experiments, and he is consequently in a position to speak with authority. The pages of "The Infantry Weapon and its Use in War" display profound knowledge of the subject, combined with unmistakeable evidence of practical experience, and the author has so expressed himself that the reader of ordinary intelligence has no difficulty in understanding what is put before him.

Upon the use of long-range fire, to which Colonel Mayne is averse, and in reference to some other matters, many readers may differ from the author; but none are likely to deny that for every opinion expressed, good reasons worthy of respectful consideration, have invariably been given. The subjects connected with musketry that Colonel Mayne has omitted to deal with—if, indeed, there are any such—may safely be disregarded as superfluous.

Representative Government and War. By Captain Charles Ross, D.S.O., *p.s.c.*, The Norfolk Regiment. Hutchinson & Co. : London, 1903. Price 10s. 6d. (net).

Naval and military strategy, in order to be applied under the most satisfactory conditions, requires to be founded upon a sound strategical policy. It is not desirable that the actual outbreak of war should be awaited as the signal upon which the operations of fleets or armies are to be considered and decided upon. The interests of "World-Powers" must necessarily clash in one direction or another, or in many directions, and in times of peace it is an important duty of responsible statesmen to take counsel and make up their minds how they can best safeguard, in the event of war, the interests of the nations whom they represent, and at the same time assail those of their possible adversaries, so as to reap solid advantages from a successful conflict. The leap into war needs to be made from a sound "take-off." Just as in strategy and tactics, success depends upon the judicious selection and employment of "stepping stones," so that a firm foot-hold is gained upon each before a stride is made to the next; so also it is in the case of strategical policy. The admiral and the general alike look to the statesman to furnish them with suitable bases of operations; and the statesmen themselves must therefore, if they are wise, turn for advice to the professional experts in order that the strategical policy of the country may be conducted accordingly.

Under an autocracy it must be the fault of the autocrat himself if foresight and consistency are absent; but in countries blest with "Representative Government," the situation is different, because national interests

are too often obscured by the anxiety of politicians to obtain and retain office. Whatever course, be it good or bad, a Government may pursue, the Opposition—simply because it is in opposition—invariably condemns; and, as the result, sailors and soldiers are vicariously sacrificed for political blunders begotten of party strife.

Such, put as briefly as possible, are the views which Captain Ross has far more ably expressed in this very interesting and instructive work. Constant reference is made to ancient and modern history, and by means of the examples quoted the case is proved up to the hilt. It is made quite clear that under "Representative Government" it is usually a matter of extreme difficulty for even an exceptionally able commander to obtain the "strategical initiative" at the outbreak of hostilities, simply because in the hope of keeping smooth the paths of diplomacy during their own tenure of office, politicians are prone to neglect territorial and other precautions of vital consequence to the national interests. Instead of cultivating the gift of foresight and doing their best to prepare, in times of peace, against eventualities, the unceasing prayer of party politicians is: "Not in our time, oh Lord!" Thus it is all the world over—except in Russia. Guided by the will of Peter the Great, the Russian Empire pursues with unwavering consistency her strategical policy. Mistakes are made and rebuffs encountered from time to time; but *La Russie ne boude pas, elle se recueille.* There is never any doubt as to what are Russian "interests," nor as to her intention to defend them if challenged—consequently the need seldom arises unless through her own act.

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